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ILLINOIS MEDICAL JOURNAL

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ILLINOIS MEDICAL JOURNAL

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Editorials

YOU MAY NOT BE INTERESTED IN POLITICS, BUT POLITICS IS INTERESTED IN YOU

IN ITS MANAGEMENT OF PUBLIC BUSINESS POLITICS GRIPS EVERY MAN'S CONTACT WITH SOCIETY AND WITH THE GOVERNMENT—PHYSICIANS CANNOT AFFORD TO QUIT POLITICS, FOR POLITICS WILL NOT QUIT THEM—THE QUALITY OF POLITICS DEPENDS UPON THE DEGREE OF PUBLIC INTEREST IN IT

Party politics must go under the hammer and go now. Physicians of Illinois must make count their influence for requisite legislation through the results of the next election.

There is no time to waste, elections hang over our heads. November 8 is a day of destiny. The voice of the candidate is heard in the land. So the vote of the physican must be cast for those candidates who will lend an ear to the profession as to matters affecting the medical profession and its dependent, the public health and welfare.

Ballots talk. More effective than all other oratory is the count at the polls. Let the physicians of Illinois show that this gift of electoral eloquence is not denied them by making themselves heard at election day.

The times demand that patriotism supersede partisanship. What alliance each candidate for any office has made with the insidious red propaganda springing up stout as purslane all over the land, each and every doctor should discover without any delay and judge his voting accordingly.

Doctors who think that they can dodge the perhaps tedious, but admittedly necessary task of becoming interested to the point of personal exertion in the government of the United States are mistaken. The rule holds that a man must govern his house or be governed. Apathetic physicians who are willing to submit to the despotism of money-grabbing, wire-pulling politi-

cians may find food for thought and spur to action on November 8 in this quotation:

"There is no escaping politics. It has a bearing on almost every human interest. A doctor may not be 'interested in politics,' but politics is interested in him. In its management of public business it grips every man's contact with society and with the government.

"It is impossible to be born or to die, to marry or to be divorced, without politics having to do with the matter. Every tax you pay, the smooth streets and the good roads, the public schools, the fire department, the health department, the water you drink, asylums, courts, custom houses, jails and penitentiaries, the police, the post office, every law and ordinance—all spring from government, government springs from parties, and parties are in politics.

"The people can not afford to quit politics, for politics will not quit them. The quality of the politics depends upon the degree of the public's interest in it."

But the people can quit the parties and should quit any party whose candidate does not stand for the people's principles.

What better, plainer plea can be made the physician and at this crucial moment.

Remember election day, November 8.

As a guide to the voting physician let information be given on the following general principles, of interest equally to the medical profession and the general public.

We have too many laws, and too large a tax levy.

Living expense and taxes will be lowered as soon as hundreds of over-priced, interfering, recently adopted and unnecessary laws are done away with. America is mortally ill from a plague of laws. This evil is maintained at an annual cost per capita of $91, and of about $350 per family. One out of every twelve people in the United States who are over sixteen years of age, and who are gainfully employed, is on the public payroll. In the last few years this ratio has arisen from one out of every 1,000.

There are 15,000,000 employees on the public payroll according to the estimates of census statisticians. *This places an office-holder or "tax-consumer" on the backs of every two tax-producers.* Exclusive of pensioners there are almost three million public servants whose pay comes from the ever increasing taxes. A large proportion of this number is engaged in the administration and execution of superfluous statutes.

A similar situation crushed France and produced the French revolution. It was the bane and damnation of Germany.

"Americans are now compelled by law to do, and prohibited by law from doing, more things than were the citizens of autocratic Europe before the war."

We are the victims of a paternalistic regime that will eventually enslave and bankrupt the country. The *cost* of *government* has become unbearable. Too many functions of local and of state governments are being controlled by hidden bureaus in Washington. *There is more power exercised today in these bureaus by unknown "experts," political appointees of whispering propaganda, than by the courts themselves.*

Centralization of government, bureaucracy, state subsidies and autocratic control are a poignant menace, and a fatal growth.

Bureaucracy is a curse wherever inaugurated. In the management of medical affairs it is fatal. Germany stood at the pinnacle of medical achievement thirty years ago. Under bureaucratically administered state medicine, Germany has come to have the worst medical service in the world and the poorest care for the health of the people. It will be ruinous to the health and welfare of the United States if this system is adopted in this country.

Before the coming legislature and convening Congress there will be presented many bills, attempting to regulate incompetently the practice of medicine and needlessly to increase taxation. Many of these bills will provide for the licensing to practice medicine, of uneducated and improperly equipped men and women.

We ask no especial favors for doctors, but we believe in a single standard of education and a thorough professional training before a man or woman can be licensed to practice the healing art or to diagnose disease.

Persons who seek a license to treat human ailment in the State of Illinois should know how to make a diagnosis of disease which is essential for the conservation of the public health.

There should be no side door short cuts to the practice of the treatment of disease in this State.

Don't vote for any man unless you know his attitude towards medical legislation designed to increase taxes and to medical legislation in-

tended to safeguard your health and that of your neighbors and fellow-citizens.

DON'T FORGET TO GO TO THE POLLS ON NOV. 8—AS CALVIN COOLIDGE SAYS, "THE RIGHT TO VOTE IS MORE THAN A DUTY, IT IS A PRIVILEGE." WHERE MEDICINE IS CONCERNED, IT BEGINS TO LOOK AS IF THE DOCTORS MUST EITHER VOTE FOR COMMUNITY RIGHTS OR ELSE BE SUNK BY COMMUNISTIC WRONGS

Again the job of voting confronts us at the election November 8. This year added to all the rest, we must choose a president.

Must the physicians of the land spend even more money, and more time, to discover that neither they nor their profession can compete with practical and practicing politicians? When will they learn the importance of paying more attention to election day—every man with an "M.D." at the end of his name who calmly sits back now and lets the country be run by those who are not "too busy to bother" with the ballot?

What economic self-preservation the medical profession has been able to achieve has not accrued from any devotion to citizenship duties, but because of the respect in which, even in this topsyturvy day, the average citizen, still holds the medical profession. Of course this same "Mr. Average Citizen" through endowed foundations is only too often trying to practice medicine himself—but—even so

If the doctors of Illinois would attend ever so slightly to their personal citizenship duties—which is a task involving their personal participation in all elections—the result would be a near-panacea for a multitude of civic ills, that are insidiously near to eating at the very core of the essence of civilization.

It is no longer a question of a man's "getting" or "not getting into politics." Medical men must cry "Checkmate" to politics. For the politicians of the country have already grabbed hold of the very tail of the medical profession. and are literally swinging this august body of men about with as little ceremony as if it were a yellow dog!

Blinking at facts is useless. The entire trend and achievements of legislation in the past twenty years shows how medicine is made the pawn of politics. In another twenty years the medical profession will find itself throttled and altogether ham-strung unless it awakens speedily to the situation. Nor does "waking up" mean that any man can do this deed vicariously. The situation is up to the individual physicians of the land. Every doctor must get to the polling place.

Each doctor must doff his toga of science sufficiently long to discover what is going on before it goes so far as to give him and his profession, and par consequence, the public health and the virility of civilization—a knock-out blow. Just as soon as physicians enter the actual arena of politics and lend their professional support to those ethical lawyers and clergymen who are accomplishing a brave futility in the effort of getting politicians out of politics, there will be the requisite essential change in conditions for restabilizing foundations of the world's greatest democracy and even of civilization itself.

Well has it been said that the policies of one set of politicians are in force so long as "fifty and one-tenth per cent. of the votes are cast for those politicians, and the opposite policies are in force when one voter in a thousand changes his mind. It is on such extremely slight changes as these that often hangs success in any political field."

Even now, hobbled by the almost ubiquitous lethargy with which the average physician regards elections, candidates and the entire system of democratic government—physicians have far more influence than they suspect with members of law-making bodies.

Wide knowledge, good judgment, public spirit and the gift of vision are sine qua non with every successful man of medicine. Physicians everywhere should realize the imminent necessity for their stating to the public as well as to law-makers, not only the ideals of the profession, but the arguments for adoption of these ideals and their absolute bearing upon the health and the wealth of every country. This setting forth of principles should, if indicated, be also a going forth to war for the right—a defense of medical ideals and of the country itself.

Everybody, everywhere may not agree with some of the ideas and dicta of President Coolidge. But every sane minded individual, *any-*

where, must coincide with these assertions of the nation's chief executive:

"Many of the founders of our government gave all their wealth and their lives for the right of franchise.

"The right of franchise is the right to vote.

"It is the most valuable heritage that the American people have.

"The right to vote is more than a privilege.

"It is a duty.

"Our government will continue to give us the opportunity for independence and freedom only if we do our duty towards the government.

"Our duty is to go to the polls and vote intelligently.

"It is our duty to see that each member of our family, who is qualified, votes.

"It is our duty to know the records of the candidates.

"To some of them you will entrust your liberty and the protection of your property."

Again are the physicians of the country besought to take heed of the electoral situation.

DOCTOR, GO TO THE POLLS AND VOTE ON NOV. 8—TABOO PARTY POLITICS—THE BULK OF THE DOCTOR'S WOES ARE ECONOMIC—MAKE YOUR CHOICE BETWEEN THE CANDIDATE WHO IS WRONG BOTH ECONOMICALLY AND SCIENTIFICALLY AND THE CANDIDATE WHO WILL RIGHT THESE WRONGS—CHANGE UNBEARABLE CONDITIONS

Every physician in the State of Illinois must go to the polls and vote on Nov. 8, or else hold himself largely responsible for and absolutely devoid of a right to protest against economic conditions entailing little less than menacing servitude of the medical profession.

Even if a man fails to agree with all the tenets and policies of former President Coolidge, there can be no dissension from Mr. Coolidge's clearly expressed dogma that:

"EVERY VOTER OUGHT NOT MERELY TO VOTE, BUT TO VOTE UNDER THE INSPIRATION OF A HIGH PURPOSE TO SERVE THE NATION."

The voice of the ballot is almost as loud as the stentorian tones of that good old-fashioned medium, "Spot cash." For spot cash, or ready money, can purchase almost any of the necessities of life, and "necessities of life" savour of the great mirage in the homes of far too large a percentage of practicing physicians today. Either their practice is being taken out of their hands by lay institutions and endowed foundations practicing medicine or, if they have kept even a small remnant of practice, the patients are unable to pay. World-wide as is the depression today, sharp as is the pinch upon the purse of every citizen, the doctor's pocketbook began to get this squeeze acutely at least fifteen years ago. Despite the danger that was pointed out in the columns of this periodical, despite the diagnosis that the trouble lay rooted in a socialistic infection spread by politics and political contacts, and that the one panacea lay in the ballot box, thousands of physicians disregarded the simple remedy for a raucous ill.

Again the Editor of this JOURNAL asks, ay, even entreats his brothers in medicine to stop, look and listen to where this trend is leading. Economists admit that we are passing through one of the greatest crises in the history of civilization. So far it has been kept chained within the limits of economics, but those who are weather wise are dreading the hour when, if unchecked, the debauch of degeneration shall send its lesions into tht very heart of science and of culture. The footprints in the trail are already marked only too plainly in the fields of the fluid sciences of which medicine is at once the sacrifice and the sacrificer.

What every doctor should do and do without hesitation is to discover which men among the hundreds striving to be elected as government of the country are the men who stand for Americanism; who are patriots first and politicians afterwards.

This is the time, as never before, when elections demand not party politics but patriots of the people.

The United States of America founded its Constitution, owes its birth to the principles of liberty as well as to community justice. It has become the habit with fine phrasers to substitute the word "communist" for "community" and "party" for patriot."

When the doctors of this country get down to brass tacks and weigh in the balance whether it is better to spend a little thought on politics and less on protest, more on citizenship and less

on complaint over spilled milk, the answer will be easy to dozens of problems confronting the doctors today.

Try it during the next fortnight. Find out who is running for office in your town, your county, your state, your country. Discover the attitude of these candidates towards these problems besetting humanity with which the physician must cope every day of his life. Decide upon the man who can best serve the purpose of the ideals of organized, scientific, self-sacrificing medicine, and let your ballot do the rest.

CLINICS FOR PHYSICALLY HANDICAPPED CHILDREN WITH THE APPROVAL AND CO-OPERATION OF ILLINOIS STATE MEDICAL SOCIETY

ACTION OF THE COUNCIL OF THE ILLINOIS STATE MEDICAL SOCIETY

Monday, September 12, 1932

In order that the 16,000 or more physically handicapped children of Illinois may receive proper treatment and be made self-sustaining citizens, the Illinois State Medical Society is entering into a far-reaching program of clinics for physically handicapped children.

At the Council meeting of the Illinois State Medical Society held in Chicago, Monday, September 12, attended by physicians from all sections of the State, as well as by the State Director of Public Health, Doctor Andy Hall, a plan was adopted whereby each county medical society may conduct clinics for the care of this group. These clinics will be self-sustaining and will be conducted without increased taxation on the public.

These proposed clinics will not interfere with the work already undertaken by other recognized agencies nor with the clinics already functioning in some sections of the State. The Illinois State Medical Society hopes that the clinics will receive the co-operation and assistance of lay groups within the counties and that because of this co-operative effort great success will be attained and many of the present physically handicapped be restored to society. At the present time such work is being carried on with great success by the Warren County Medical Society at Monmouth, Illinois.

Through the efforts of the State Department of Public Welfare, the State Department of Public Instruction and the State Department of Public Health, a survey was made which revealed there were more than 16,000 physically handicapped children. This survey will be used as the basis for the clinics sponsored by the county medical societies.

The crippled child in most instances is a chronic invalid. Too often the parents of these children are poor and cannot provide adequate care or medical attention over a long period of time. As a result these children are looked upon as hopeless invalids and very little is attempted for the improvement of their condition. The parents, the doctor and the community finally become reconciled to the belief that nothing can be done. As a result no one seems to care. The job of reclaiming the cripple belongs to the community and the county. In the belief that the county medical society should shoulder this responsibility, the Council of the Illinois State Medical Society is recommending that the physicians of the counties, organized for the best interests of the community, assume the task of reclaiming these physically handicapped children for the State.

POLICIES OF THE EDUCATIONAL COMMITTEE REGARDING RADIO HEALTH TALKS

1. TREATMENT is not to be discussed over the radio by any of the agents of the Educational Committee of the Illinois State Medical Society.

2. PERSONAL ADVERTISING must be avoided.

3. ALL RADIO PAPERS are to be submitted to the office before being broadcast. No article is to be given over the radio until it has had the approval of the Educational Committee.

4. RADIO PAPERS MUST BE READ EXACTLY AS APPROVED BY THE COMMITTEE. There are to be no changes or additions made when the article is read over the radio.

The Educational Committee of the Illinois State Medical Society wishes to conform with the policies of the House of Delegates of the State Society as well as with those of the House of Delegates of the American Medical Associa-

tion, as stated in the Journal of the Association for June 11, 1927, as follows:

"The House of Delegates concluded that interviews or articles of an educational nature on medical or health subjects, intended for the lay press or lay audiences should give expression to the consensus of opinion of the medical profession rather than to personal views which may be in conflict therewith, and that articles should appear preferably under the auspices of the American Medical Association or one of its component societies or constituent associations.

"* * * discussions of new discoveries, of proprietary products, and of special notions may well be confined to medical periodicals, which constitute an open forum for determining the actual status of things in dispute."

TO SUCCEED IN A RADIO TALK, the *subject must be made to interest the audience.* Repeat your subject from time to time.

Avoid long words or long or involved sentences.

THE MOST RECENT UNIT TOWARDS MAKING CHICAGO WORLD'S MEDICAL CENTER

Any facilities missing or assets lacking to seal Chicago's claim to the title of "Medical Center of the World" would appear to be supplied by the newly opening Cook County Graduate School of Medicine. Its scope involves procedure that will abrogate the stress, inconvenience and expense of long and often disappointing postgraduate work abroad.

This institution will give the medical profession opportunity for graduate studies and supply it with no less fertile a field of clinical material than the Cook County Hospital, one of the greatest medical clearing houses ever known to civilization.

Statistics show that the 3,500 beds of the various branches of institutional care afforded by the Cook County Hospital are almost continuously occupied and that the number of patients per annum averages upwards of 60,000, with practically all known human ailments under observation.

The success of any scientific or learned profession and the value of its benefits to the communities it serves is based upon the perennial and unremitting habit of study and augmentation of knowledge to which its members conform. No man of medicine knows all he can, or all he should or all he must know about the arts of healing, upon the day he gets license to write "M. D." after his name.

Possession of a sheepskin from the best of medical colleges writes only "Ave" and not "Vale" to any doctor's task as a student. He has learned in his colleges, *of* medicine and *of* surgery. He is ready now to learn from the great university of suffering humanity itself the *why*, the *wherefore* and the most positive *how*.

Need for postgraduate work has never been denied. Necessity for this training is emphasized more and more every day. And the best postgraduate work is clinical.

The finest faculty of the foremost postgraduate institution that a finecombing of medical savants might produce would be at a sad loss if clinical material were absent. The postgraduate student, even more than the embryo medico, must needs have the bedside clinic for best results. As a consequence this opening of a postgraduate school affiliated with the Cook County Hospital is a master stroke of achievement and opportunity both for medical men and for their patients. It is an all American opportunity for all Americans for the Cook County hospital affords an almost peerless clinic.

Under the name of The Cook County Graduate School of Medicine, affiliated with the Cook County Hospital, national medical education is securing its greatest gift in the past half century. Here is the opportunity for every doctor to meet the demands placed upon him by a modern civilization and the almost fabulous advancements in the medical sciences. It is his chance to "keep in step."

Such advancements in the last twenty years have been tremendous and fundamental almost to the point of incredulity. Yet the benefit of the bulk of this medical research has been felt by the undergraduate student. Here is the graduate's chance! Because of these advances, the post graduate college has flourished and done nobly by the older men in the medical profession. So long as there is advance in medical science, so long will the need for postgraduate schools keep pace.

Even Europe admits that today medical courses in our larger and best managed medical colleges are the equal of those in any foreign uni-

versity and even in some instances far superior to anything that Europe can offer.

What weakness lies in our medical educational equipment in the matter of variety and comprehensiveness lies primarily in what the American Medical College can offer to the graduate man. Postgraduate work must be intensive as well as competent and comprehensive. Few men can afford to leave their practices for a great length of time, nor to go clear across the continent to get what they need. Nor is the tedium of undergraduate routine either desirable or acceptable to the postgraduate man, whose presence in the undergraduate class room on the other hand is only too often regarded as an intrusion and that excusably enough.

Thanks to the foresight of Cook County medical men this postgraduate gap is about to be bridged, and that in the very heart of the continent—Chicago.

For in the Cook County graduate school of medicine the medical profession has the opportunity of graduate study in an ideal environment supplemented by the almost unlimited facilities of the Cook County Hospital, and under expert supervision.

Only by a foundation of thorough medical and surgical training can be built the superstructure of a successful medical career. That early knowledge acquired from the fundamentals in medicine must be reinforced by graduate training. Of this there is no argument. The Cook County Graduate School of Medicine and its affiliation with the Cook County Hospital offers study of all classes of medical and surgical cases. Courses are organized in all branches of medicine and surgery as well as intensive courses for the physician or surgeon who can spend only a short time in extra study but in that must obtain the greatest amount of training and knowledge. Longer courses are available for those men who wish to prepare themselves for a chosen specialty, and need not hasten unduly. Advanced graduate medical education is literally laid on the door steps of every physician in the middle west by this new instituton.

While the courses of our medical colleges have been expanding in richness and merit and variety during the last two decades this same progress in the fundamental sciences of physiology, bacteriology, biochemistry and pathology has lengthened the undergraduate medical curriculum to an average of seven years. The greater part of this time is devoted to lectures, demonstrations and laboratory work. Even in the most progressive medical school the undergraduate student devotes only a small part of his seven years to the bedside study of disease. Already there is demanded a better general education and colleges have substituted laboratories for lecture rooms. Indicated now is the third important step in medical progress,—that is to give the student practical first-hand acquaintance with disease and casualty in the out-patient departments and wards of hospitals.

This lack of sufficient practical experience with patients during the undergraduate course has led thousands of young physicians to seek this training in postgraduate study abroad. Yet where abroad, save in one or two cities, are such opportunities presented as right at home?

Further, the doctor who is to practice in America needs familiarity more with conditions and disease here, rather than in dissimilar Europe. Yet hitherto he has been almost forced to seek postgraduate training abroad.

The German and Austrian universities realized long before this cognizance came to our American institutions,—the great stimulating influence to thorough clinical and research work induced by the presence of undergraduate and graduate students in their hospitals. Further, the work of a hospital in which there is no teaching is rarely first-class. To assure keen interest in patients, a thorough study of the cases, better treatment of patients and the diffusion of medical and surgical knowledge there must be students in our hospital wards. There lie the text-books that teach the most vividly.

There is no institution in America or in Europe that has as much to offer to the graduate student, the young physician, or the future specialist as has the Cook County Hospital of Chicago. Mutual benefits to the hospital patients and to the graduate students are numerous. From this new undertaking will result better care of the patient, increased facilities and countless contributions to the knowledge of disease. Cook County Hospital will become for the middle west what the Johns Hopkins Hospital has become for the east,—the great center for the best care of patients, for teaching and research, and professional incentive.

In Chicago and in connection with the Cook

County Hospital will be the greatest hospital resources in America. The members of the staff are teachers of the newly founded, incorporated and chartered Cook County Graduate School of Medicine.

This founding and incorporating of the Cook County Graduate School of Medicine in Affiliation with the Cook County Hospital is a welcome addition to the teaching resources offered by the city of Chicago and an enhancement to medical education everywhere.

It comes at a time when there is great need for this type of institution, with its chance for intensive work in special fields.

The Cook County Graduate School of Medicine has been organized and incorporated not for profit. It is the aim of this school to give courses ranging from two weeks to one year in practically all branches of medicine and surgery, including many of the specialties. Placed at its disposal are the enormous material contained in the Cook County Hospital, obligating the profession, for the first time in history, to make a determined effort to utilize this material for the advancement of medical science by offering to the doctors of this country extensive courses in special branches of medicine. It is presupposed, of course, that these postgraduate students will be graduates already from recognized schools of medicine and are in good standing in their community and have had sufficient basic medical education to appreciate such courses as have been arranged for and scheduled.

The Faculty of this School of Medicine will be made up entirely from the staff of Cook County Hospital. Its roster includes many of the outstanding men from Northwestern University School of Medicine, Rush Medical College, and Illinois and Loyola Medical Schools.

REPORT OF THE COMMITTEE TO INVESTIGATE THE MEDICAL ADVERTISING MADE TO THE COUNCIL, SEPTEMBER 12, 1932

In the year since this committee was appointed an effort has been made to find out what has already been done in the field of medical advertising by medical organizations, business houses and public health agencies. So far as we can find out only one state organization has sponsored a campaign of paid advertising. Quite a number of county and other local bodies have conducted brief campaigns. A good many of these have used copy furnished by one man.

Our impression is that these campaigns have been unsuccessful and unsatisfactory. Two campaigns stand out as being satisfactory, the one conducted by the Winnebago County and the other in New York City. Both had definite objectives. The men behind them knew exactly what they wished to accomplish and were apparently successful in doing it. Other campaigns have apparently been uncertain as to the results they hoped to accomplish and have apparently committed a good many errors in advertising technique.

Business organizations have done considerable advertising. The Metropolitan Life Insurance Company has spent a great deal of money every year. It is our impression that they do this as a matter of public service, feeling that they have been favored with public patronage to the point where they should do something in return for this. They appear to do it exceedingly well. As we understand it they do not know whether this brings them an actual return in dollars and cents. Several pharmaceutical houses do considerable medical advertising, particularly Parke, Davis & Co., Mead, Johnson & Co., Eastman Kodak, E. R. Squibb & Sons, Merck and others. Representatives of these firms with whom we talked were uncertain as to the returns their companies secured from this advertising, but apparently felt that it should be continued.

Various public health associations have done a good deal of advertising—the National Tuberculosis Association, the New York Tuberculosis and Public Health Association, the American Society for the Control of Cancer and the New York and Philadelphia county units of that organization. These apparently do not pay for their space. They apparently commit a good many errors in advertising technique.

The American Dental Association has appointed a committee to investigate the matter of advertising. Apparently a number of advertising campaigns by various local dental groups are now in progress. There seems to be a considerable volume of sentiment among the dentists opposed to this advertising.

The Department of Public Health of Massachusetts indulges in a good deal of publicity, but is said to be opposed to paid newspaper advertising in furtherance of their cancer clinics.

It appears that there has been no decrease in the time interval between the appearance of symptoms and consultation with the doctor. The attendance at these clinics increases with each wave of publicity and advertising.

The Public Health Institute of Chicago and the Life Extension Institute of New York have done a good deal of advertising. The stench of the Public Health Institute is in our nostrils most of the time and has probably done more than anything else to make doctors hostile toward the idea of advertising.

One publisher wrote: "My whole contention about this medicine proposition is simply this: If the medical profession itself would modify its old-fashioned code of ethics and cooperate a bit with publishers and the public, enough sentiment could be stirred up to induce Congress to go a step further and clean up medicine advertising as thoroughly as were the labels and cartons by the Pure Food Law."

One of the foremost advertising men in the country wrote: "I have always believed in the idea that doctors would some day advertise and long ago sketched out in my mind how they should go about it. Collective advertising by the medical profession could be made one of the greatest benefits to the public health of anything yet conceived. Such advertising should be directed to establishing relations between all the people and reliable doctors for the general supervision of health; people should be taught not to wait until the last moment before taking medical advice, but to keep in touch with a good physician with the idea of keeping well. Of course, the advertising that doctors do must be unselfish, and developed entirely to the value and importance of health and means of preserving it, and especially the necessity of having a family doctor to consult with and his importance in the scheme of things. Also, I think such advertising should warn against self-medication and, if possible, direct these warnings specifically against the great number of dishonest, fraudulent and misleading patent medicines."

An editor in Iowa said: "This is a noisy age and amidst it all, in grim silence, sit nearly 150,000 physicians, the quietest of all earth's inhabitants."

Advertising is educational. It is an intangible thing, yet it builds confidence in products and has made the American people happier. It has made them want things and to want anything is synonymous with ambition. Advertising can do the same thing for the medical profession. It can sell the people what they want most of all—health. At this moment there are ten million persons in this country who should tomorrow have a physical examination. Out of 120 million of folks the doctor gets as his patients the million who are suffering pain and many of this million should have been treated years ago.

One man wrote that he was of the opinion that if medicine offered to pay for the publication of life-saving information the press would renounce any public spirited responsibility and ask that we pay for everything of a health nature brought to the attention of the public.

This committee holds no such opinion of the press. We met with the advertising managers of all the metropolitan dailies in Chicago. They were familiar with our problems but were not certain that we were ready to indulge in any advertising campaign. They were friendly, cooperative, willing to help us in investigating the possible utility of an advertising campaign by organized medicine. The advertising managers, as well as the publishers of these same papers, indicated that they would be glad to cooperate in the future with advice, suggestions, research or any other form of practical aid that they could render.

It should be pointed out that there is a rather wide-spread feeling among doctors that medical organizations ought to indulge in advertising.

As a result of its year's investigation your committee has had certain conclusions forced upon it.

1. The medical profession and the press misunderstand each other when they talk of advertising. The doctor visualizes display advertising by the individual doctor as a means of getting patients for himself. The press are apparently as strongly opposed to this idea as are most doctors. It is extremely unlikely that reputable newspapers would accept such advertising. They visualize educational advertising done by medical societies as groups.

2. We are of the opinion that at this time the Illinois State Medical Society should not indulge in any advertising campaign. Our reasons for this feeling are too numerous to enumerate here. To us they seem sufficient.

3. There is no reason for changing the code of ethics regarding advertising by doctors as individuals. This investigation did not elicit a single fact that did not substantiate the wisdom of this prohibition. The code of ethics needs no change to permit advertising by medical societies.

4. Paid advertising should be recognized by this society as an ethical medium for use by medical societies as a means of education.

5. If, and when, advertising campaigns are undertaken it will probably be done by county societies rather than by the state or national organization.

6. If a county society should wish to undertake an advertising campaign it should do so only after the objectives to be attained are well understood. It should consult advertising experts in the preparation of its copy. To do otherwise would be equivalent on the part of the doctor to self-medication by the laity. It would be equally unwise and probably more disastrous.

7. Your committee realizes that any county society might at any time be faced with a problem whose solution would be easier if advertising were used. Such a society should be free to use this medium and should understand that it has the support of the Illinois State Medical Society in so doing.

8. Closer contact with the press is desirable and undoubtedly would be mutually helpful. This contact might be arranged in various ways. Minnesota seems to have a very good arrangement. Members of the press need education in things medical and probably we are equally ignorant in matters of the press.

9. Such contact would be following the policy adopted some years ago by this society of making friendly contacts with all worth while organizations.

10. The press should be educated to look to the county societies for information regarding local questions, to the state organization for larger ones and finally to the American Medical Association for general information. Representatives of the press should meet whole-hearted cooperation when they come to these societies for information or advice. In our opinion medicine should occupy such a position of authority in this country that no reputable magazine would consider the publication of such an article as that of De Kruif in the March issue of the *Ladies Home Journal* without consulting the Department of Public Health in its own state or the headquarters of the American Medical Association.

AUXILIARY NEWS

Mrs. Walter Jackson Freeman of Philadelphia, our National President, has been on a tour visiting some of the State Auxiliaries. The Wisconsin State Medical Society honored our President by requesting her to address the House of Delegates at the Annual Session held in Milwaukee in September. While there Mrs. Freeman conferred with the Convention Committee for the American Medical Association with the result that tentative plans were made for the great National Convention which will be held in Milwaukee June 12-16, 1933. Won't each of you reserve these dates and plan to spend them in our neighbor state?

While in Chicago, September 24, Mrs. Freeman was kind enough to give five precious hours to a conference with her Fourth Vice-President, Mrs. Rollo K. Packard of Chicago and the Illinois State Auxiliary President, Mrs. Edward W. Mueller, of Chicago. These officers report that much valuable information was gained in this friendly conference.

ADVISORY COMMITTEE

Dr. James H. Hutton, Chairman, 30 N. Michigan Ave., Chicago.
Dr. R. R. Ferguson, Chicago, Ill.
Dr. W. D. Chapman, Silvis, Ill.
Dr. C. J. Whalen, Chicago, Ill.

1932-33 PERSONNEL OF THE BOARD OF DIRECTORS OF THE WOMAN'S AUXILIARY TO THE ILLINOIS STATE MEDICAL SOCIETY

OFFICERS

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Pres-elect—Mrs. Solomon Jones, 6048 Buchanan St., Danville.
First Vice-Pres.—Mrs. A. H. Brumback, 1503 Jackson Blvd., Chicago.
Second Vice-Pres.—Mrs. S. E. Allen, Arcola.
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2 Years—Fourth District—Mrs. C. H. Anderson, East Moline.
2 Years—Fifth District—Mrs. H. B. Henkel, 2135 Wiggins Ave., Springfield.
2 Years—Sixth District—Mrs. C. B. Dearborn, Mt. Sterling.
2 Years—Seventh District—Mrs. C. M. Jack, 541 W. Macon St., Decatur.
Eighth District—Mrs. H. I. Conn, Newman.
2 Years—Ninth District—Mrs. E. W. Burroughs, 129 West College, Harrisburg.
1 Year—Tenth District—Mrs. I. L. Foulon, East St. Louis. (To fill vacancy.)
Eleventh District—Mrs. E. R. Steen, 308 Sterling Ave., oliet.

CHAIRMEN OF STANDING COMMITTEES

Organization—Mrs. Solomon Jones, Danville.
Press & Publicity—Mrs. F. P. Hammond, Chicago.
Legislative—Mrs. W. D. Chapman, Silvis, Ill.
Printing—Mrs. R. K. Packard, 6901 Paxton Ave., Chicago.
Convention—Mrs. H. B. Henkel, Springfield.
Program—Mrs. T. O. Freeman, 1204 Wabash Ave., Mattoon.
Revision—Mrs. J. H. Hutton, 7235 Coles Ave., Chicago.
Public Relations—Mrs. T. D. Cantrell, Bloomington.
Credentials and Registration—Mrs. Lucius Cole, 1117 N. Lathrop, River Forest.
Hygeia—Mrs. A. Edison, 1840 S. Third Ave., Maywood.
Finance—Mrs. A. D. Middleton, Pontiac.
Archives—Mrs. F. M. Mason, 1316 N. Vermilion St., Danville.
Hostess—Mrs. E. S. Allen, Arcola.

THE WOMAN'S AUXILIARY AND ITS RELATION TO THE ILLINOIS STATE MEDICAL SOCIETY

MRS. T. O. FREEMAN
MATTOON, ILL.

President's address read in Springfield at the Annual Luncheon of the Woman's Auxiliary to the Illinois State Medical Society, May 18, 1932.

Knowing there would be a number of physicians' wives present at this luncheon who come from unorganized counties and who perhaps have not attended a regular annual meeting of the Auxiliary, I wish to take this opportunity to tell you something of what we have tried to accomplish during the past year.

First, I wish to call your attention to the quiet, unobtrusive way in which we carry on our work. Early in the year a district official of a woman's organization received a letter from the head of a cult wishing to make arrangements to put on a demonstration of his cure before his organization. This official happened to be a physician's wife, a member of the Medical Auxiliary and a Councilor, so she passed the letter on to your president with a request for instructions. The letter was sent to our advisory council which gave us the information concerning this cult with Doctor Neal's legislative report on the same and the recommendation that it be ignored. The result was that cult failed to get the publicity it was seeking.

The members of our Auxiliaries have been requested to write letters to Congressmen protesting the passage of legislation which our Medical Society considers detrimental to the best interests of the public.

We have also asked them to secure the interest of lay friends enough to write to a popular magazine concerning the harmful effects of articles on Medical matter appearing in recent numbers.

I wish at this time to pay a tribute to our health commissioner. No health commissioner of the state was ever received with as universal approval as was Doctor Hall by the Medical fraternity of Illinois. Andy Hall is loved by all the Doctors who know him and they feel that their interests will be conserved as well as the best interests of the people of the State in all health matters.

The Illinois Medical Society is outstanding in its efforts to combat the adverse effects of lay propaganda on the practice of Medicine. I have attended the National conventions for a number of years and there is not another State Auxiliary report that shows they are carrying on any great activity along these lines. Our State Medical Journal contains articles in every number in regard to the economic conditions and is making every effort to enlist the attention of physicians to the trend in this condition. Of course, if the practice of Medicine under the control of the government is the best thing for

the people, then the economic condition of physicians will have to be remodeled along these lines.

However, a great many questions will have to be considered before we can make a decision on that. The Christian religion was built on the personality of Christ and had as its basis the value of each person as an individual. Our country likewise was founded on the right of each person to develop his own individuality and for this purpose we developed our system of free public instruction.

It is only human nature to wish to have our pet schemes carried out and have every one doing things the way we think they should be done. However good the ultimate end may seem to some groups, let us consider carefully before we try to have things done en masse instead of leading people to see what is best for them and thus desiring the thing for themselves and retaining their independent Americanism. The better way, although it may seem slower and less spectacular, is through education. We advocate periodic examination by the family physician. Many mothers follow this procedure from the time before the baby's birth, and the child's health is cared for by the physician all through the early years. Then why must this child be subject to a round-up when he is ready to go to school? Let us be consistent and recognize the physician's ability to conserve the best health interests of that child. It is all right to teach people that their children should be examined and their defects corrected, and show them that the healthy child can do better school work, but I believe we can suggest a better way than by herd examinations. If a child does his school work well and his parents are satisfied with his health that is enough. If he cannot do his school work properly, then that is a matter for the teacher to bring to the attention of the parents. Any teacher can detect defective vision, poor hearing, bad posture and a habit of breathing with an open mouth. The one or more of those from which the child is suffering can be called to the attention of the mother with the recommendation that she take him to the family physician to see if some physical defect is preventing him doing good school work.

Teach parents the value of periodic examination and of preventive measures, so that they will desire them for themselves and their children. Of course this would not involve putting on a spectacular performance in which great groups of children take part. But is it not much more important to consider the effect on the child and his reaction nervously and mentally?

Even among the poor you find very few who do not have a family physician. Little Jimmie, whose family lives partly on the county, knows who "Our Doctor" is. This family doctor is the one who should give the vaccines and immunizations and his office is the health center for every family which seeks his services. You cannot herd children into centers for immunizations, for vaccinations, examinations, etc., without making them less free, less sturdy, independent Americans.

Good health is something you cannot hand to people without their desire for it. Health is something we must earnestly desire, must strive for, and even practice self denial at times to attain.

In conclusion, let me urge every physician's wife—whether an Auxiliary Member or not, to read the Medical Journal and wake up to the problems that are facing our husbands.

SOCIAL INSURANCE UNDERMINES NATIONAL CHARACTER—

(Continued)*

Someone has said, "Happy is the nation that has no history." Whoever said this probably had in mind the old type school history textbooks which contained little besides records of military campaigns, revolutions and international wars. Viewed from that standpoint the epigram was unquestionably true. Today a more suitable epigram would be—Happy is the nation that has no need for charitable organizations or devices. The ideal society would be one in which every individual can and does secure a decent living for himself and those dependent upon him by the "sweat of his brow," or by mental exertion, or, what would be better still, by the application of both brain and brawn.

There is no fundamental difference between outright charity and social insurance; both undermine character; both have a tendency to pauperize the citizen, for both rob the individual

*Ninth installment of Dr. Edward H. Ochsner's articles on Medical Economics.

of his self-reliance and his enthusiasm and his urge for industry; they both penalize the honest, frugal and industrious and favor the lazy shifters and immoral because they inevitably favor the unfair and inequable distribution of the results of labor; both encourage malingering and favor neuroses; both often give something for nothing or much for little, which is the basis of parasitism, and both delay the u'timate goal when every man shall reap the fruits of his labors.

The man who once accepts charity, particularly if it is not a case of dire necessity, is not quite so fine a man as he was before. He has lost something that nothing can replace. War, pestilence, or general disaster may reduce any one of us to want and penury and then there is no disgrace in accepting aid from our fellowmen; but under ordinary circumstances no able bodied individual with fair intelligence and health has any moral right to that which he has not honestly earned.

The proponents of Compulsory Health Insurance will undoubtedly say that it was with the view of saving men and women from the stigma of being paupers and the evil effects of pauperism that this and other phases of social insurance were brought forward. Exactly, but what has actually happened they do not foresee. As is so generally the consequence when a law is enacted on an emotional basis instead of on sound reasoning and adequate experience, an element was introduced even worse than pauperism; besides, pauperism was not relieved nor even mitigated.

There are two distinct types of paupers. The mentally and morally subnormal who are not in any way injured by the stigma of pauperism and who still remain paupers because no Compulsory Health Insurance law so far devised includes or can include them. They are the "unemployables" whom industry cannot use. The second class are old people who in their youth have been lazy or extravagant, or who have lost their savings through poor investments. Those who have been lazy and extravagant are simply reaping their just reward and have no one to blame but themselves and it is morally wrong for the government to tax the thrifty and industrious for their support except in almshouses. The way to deal with the problem of the investment sharks is to teach the pupils in our high schools something about investment and to hang the gold brick and non-secure security salesmen, or if this is too drastic devise some other way of putting them out of business.

Compulsory Health Insurance has simply added parasitism to pauperism. The effect upon the insured and upon the public in general is almost as bad as it is on the medical profession. It encourages malingering and deception; it puts a premium on sloth and shiftlessness and a penalty on industry and integrity and thrift; it robs industry of its just reward; and it encourages parasitism.

One of the first effects observed after its introduction in Germany was the changed attitude of a large group of the insured. Before the law went into effect, patients came to their physicians for the relief of real ailments; after it went into effect an ever-increasing number came with imaginary and simulated ailments for the purpose of getting the sick benefit stipend or free hospital care. The latter was particularly the case in the fall of the year when many came complaining of things that were difficult to diagnose and hence difficult to exclude such as spinal concussion, neuritis, and vague abdominal pains. As time has passed this abuse has gradually grown to appalling proportions as the following statistics indicate. Dr. Potts of Oak Park cites the following:

In a check-up of Brawnschweig, two thousand eight (2,008) people on the sick list were asked to report for a check-up examination. This induced eight hundred sixteen (816) to report for work at once, two hundred eighty-nine (289) were found fit for work and only nine hundred three (903) or less than forty-five (45) per cent. of those receiving sick money were actually sick. The proponents of Compulsory Health Insurance will undoubtedly say this is an individual instance. But not so. This abuse is so almost universal that it is seriously affecting the general honesty of the rank and file of the citizens of those countries where it has been in operation the longest. Social insurance is one of the major factors which has brought Germany to the very verge of economic ruin, an dworse than even that—it is undermining the fundamental honesty and moral integrity of the German citizen.

EDUCATIONAL COMMITTEE

June, July, August and September, 1932

SPEAKERS' BUREAU

42—Popular health talks were given by members of the State Medical Society before following groups:

Woman's Auxiliary.
Graduation exercises nurses.
Woman's Club.
School Assembly.
4-H camp of boys and girls.
Men's club of church.
Beauty operators and hair dressers.
Rotary Club.
Teachers Institute.
Kiwanis.
Boys' School—State Fair.
Household Science Clubs.

List of new suggested topics for health talks sent to all clubs that used our Speakers' Bureau during the past twelve months.

The Handbook of the Illinois Congress of Parents and Teachers carries an announcement of the services obtainable through the Educational Committee of the Illinois State Medical Society.

SCIENTIFIC SERVICE

29—Scientific programs were arranged for county medical societies.

Kane County—Aaron Arkin, Heart Disease.

Jackson County—Hugo R. Rony, Obesity and Leanness.

Sherman Hospital, Elgin—Eugene B. Perry, Prostatic Resection.

Randolph County—W. K. McIntyre, St. Louis, Scientific Study of Pruritus Ani.

LaSalle County—Henry Schmitz, Cancer; Peter A. Nelson, Diagnosis and Treatment of Oral Cancer; Joseph E. F. Laibe, Diagnosis and Treatment of Carcinoma of the Urinary Bladder; Herbert E. Schmitz, Diagnosis and Treatment of Cancer of the Uterine Cervix.

Franklin County—F. Z. Havens, Rochester.

Aurora Medical Society—J. R. Ballinger, Medical Jurisprudence.

Whiteside County—J. C. Reddington, Focal Infections; George Thomas Palmer, Pulmonary Tuberculosis in the Light of the Present Conditions.

Warren County—Philip Kreuscher, Crippled Children's Clinic.

Elgin—J. D. Willems, Industrial Surgery.

Carroll County—S. M. Feinberg, Allergy.

Paris Hospital—Henry T. Chickering of New York, Acute Infections of the Respiratory Tract, Including Lobar and Bronchial Pneumonia.

Schuyler County—George Ewell, Urological problems.

Schuyler County—H. E. Marsh, Clinic of Internal Medicine.

Schuyler County—Arnold Jackson, Treatment of Cholecystitis.

McLean County—Henry T. Chickering, New York, Prognosis and Treatment of Lobar Pneumonia.

Will-Grundy County—S. M. Feinberg, Hay Fever with Special Reference to Developments in the 1932 Season.

McHenry County—W. A. Evans, Public Health.

Franklin County—Harold M. Camp, Why a Medical Society.

Franklin County—R. K. Packard, Medical Economics.

Franklin County—Andy Hall, Health Problems of Illinois.

Will-Grundy County—William L. Brown, Cancer.

Jo Daviess County—J. R. Ballinger—Medical-Legal Medicine.

Carroll County—Clement L. Martin, Current Proctologic Problems of General Interest.

Carroll County—Lena K. Sadler, Mental Hygiene and Adolescence.

Will-Grundy County Medical Society has asked the Committee to schedule speakers for all of its weekly meetings from September first to January first.

Rock Island County Medical Society has suggested speakers for its monthly meetings to the Committee.

DIRECT ASSISTANCE TO COUNTY MEDICAL SOCIETIES

Letters were sent to physicians in the following counties announcing special medical meetings:

730—LaSalle and adjoining counties.
218—Randolph and adjoining counties.
327—Franklin and adjoining counties.
151—Perry County.

1,426

Letters sent to all county secretaries with reprint of Dr. Foley's article "Do the Veterans Get Something for Nothing?"

Letters outlining assistance we might give in Chicago sent to all officers of Branch Societies of Chicago Medical Society.

Report on care of pauper cases sent to county secretaries requesting this information.

RADIO

170—Radio talks were given from WGN, WJJD and WAAF.

These talks were all given by Chicago Medical Society members and were approved by the Educational Committee.

Most of the subjects were appropriate to the season as shown by the following:

R. J. Gordon, Convalescent Care.

S. L. Governale, The Disabled Gall Bladder.

Irving F. Barnett, The Nose, an Indicator of General Health.

Cyril Hale, Insomnia.

Russell D. Robinson, Some Common Diseases Which May Result from Swimming.

W. A. Hendricks, Cancer.

E. C. McGill, Normal Pregnancy.

Frank J. Smejkal, Tuberculosis.

L. L. Mayer, The Cross-Eyed Child.
M. L. Leventhal, Childlessness.
Harry Jackson, Skull Fractures.
M. P. Gethner.
Alex Hershfield, A Sane View of the Insane.
Leonard Shpiner, Glands of Internal Secretion.
W. O. Thompson, The Thyroid Gland.
C. J. Drueck, Backache.
I. Pritikin, Tuberculosis of the Skin.
Alex Hershfield, Mind Health.
Carl A. Johnson, What Research Has Done for Heart Disease.
W. L. Waner, Cancer of the Stomach.
Elmer L. Kenyon, Stammering.
Howard M. Sheaff, Protection Against Blood Vessel Disease.
Joseph Welfeld, The Use and Abuse of Cosmetics and Dyes.
Vernon M. Leech, Eye Hygiene.
Allan J. Hruby, Changing Picture of Childhood Tuberculosis.
W. W. Furey, Value of X-Ray.
A. M. Serby, Gall Bladder Disease.
Carroll Eugene Cook, Heat Stroke or Sun Stroke.
Clarence K. Jones, Abdominal Pain.
Charles N. Pease, Congenital Deformities.
Robert Coombs, Appendicitis.
Leon M. Beilin, The Cure and Curability of Syphilis.
Arthur Stenn, Summer Diarrhea.
Cyril J. Larkin, Superficial or Surface Infections.
Ben E. Fillis, A Brief Consideration of the Urinary Tract.
W. A. Newman Dorland, The Cancer Menace.
Andrew McNally, Enlargement of the Prostate.
Raymond H. McPherron, three talks on The Evolution of Medicine.
L. Feldman, The Heart in Middle Age.
Leon Unger, Hay Fever.
Leo L. Mayer, The Cross-Eyed Child.
C. J. Lundy, The Prevention of Heart Disease.
G. Guibor, Some of the Things We Know About Hay Fever.
Joseph K. Narat, Goiter.
Walter Bayard, Early Care of Cross Eye.
Robert W. Edwards, High School Health.
M. M. Kunde, Endocrine Influence on Growth and Development.
J. W. Hayden, The Ear.
Harold I. Meyer, Have You a Goiter?
Earl S. McRoberts, Eyes and Nose in Ragweed Season.
W. A. Rosenberg, Ringworm.
S. M. Feinberg, Hay Fever, Suggestions to Sufferers.
Raymond Green.
I. Pritikin, Personal Hygiene.
Charles J. Drueck, Cancer of the Bowels.

The Educational Committee has been offered a fifteen minute period over station WAAF, owned and operated by the Publishers of the "Corn Belt Farm Dailies" which include the Chicago Daily Drovers' Journal. The first talk in the series was given on Friday afternoon, September 23, at 2:30 o'clock.

Radio Station WJJD is getting out a radio book and we have been invited to prepare an article on the work of the Illinois State Medical Society for publication in this book.

The librarian of the Legler Branch of the Chicago Public Library has asked that the Committee send her each week the radio schedule which she may post with other "Important Events of the Week."

PRESS SERVICE

2,554—Articles released to Illinois newspapers.
1,658—Regular Press Service.
108—Monthly Press Service.
13—Diphtheria articles to newspapers of Hamilton, Hardin, Johnson, Moultrie, Massac, Saline counties.
52—Typhoid articles to newspapers of Christian, Pope, Crawford, Edgar, White, Franklin, Union, Jackson, Williamson counties.
98—Announcements of Alumni banquet Illinois Wesleyan University, Dr. Ray Lyman Wilbur speaker.
40—Newspapers announcing Carroll County Medical meeting.
60—Newspapers announcing Franklin County Medical meetings.
200—Newspapers announcing LaSalle County Medical meetings.
45—Newspapers re meeting Randolph County Medical meeting.
116—Announcements of Schuyler County Medical Society.
54—Newspapers re meeting Perry County Medical Society.
99—Newspapers announcing Logan County Medical meeting.
11—Community newspapers re meeting Branch Societies, Chicago Medical Society.
33—Health education articles written and approved:
Superficial or Surface Infections.
Cure and Curability of Syphilis.
Cancer of the Bowels.
Season for Infantile Paralysis.
Primitive Medicine.
What Is Undulant Fever?
Acidosis.
Hippocrates.
"Sniffles."
Goiter or Graves' Disease.
Care of Normal Skin.
Paralysis.
How to Avoid Cancer.
Lip Reading.
Vacation Is Over.
Whooping Cough Prevalent.
Avoid Gallstones.
Congenital Deformities.
Stammering.
Heat Stroke or Sun Stroke.

Unconsciousness.
Tuberculosis—A Disease of Youth.
Health and Disease Fallacies.
Prone Pressure Method.
Appendicitis as a Surgical Disease.
Summer Diarrhea.
More Health and Disease Fallacies.
Insulin and Diabetes.
Your Heart.
Surgery Today.
Cold Weather and Winter Ailments.
Success Begins at School.
Your Feet.

We have been asked to furnish a health column to the leading Italian newspaper of Chicago—"L'Italia." A member of the Chicago Medical Society is translating our material into Italian.

COOPERATION WITH OTHER GROUPS

The Chicago Woman's Aid—Chairman of the Committee on Public Health of this organization has asked the Educational Committee for "some interesting work for us to do to start this fall and continue doing this year. Our object is to be of some real service on a Public Health project and we should be interested in hearing about what you have to give us."

The Illinois Federation of Women's Club—Dr. Lena K. Sadler of Chicago has been appointed Chairman of Public Health, Child Hygiene and Mental Hygiene for the Federation. She is extremely anxious that health work undertaken by the women's clubs meet with the approval of the county medical societies. For this reason, she is asking her local chairmen to confer with the local county medical society secretary and discuss health problems which the physicians feel deserve the attention and support of club women.

The Woman's Auxiliary—Of the State and county societies have appealed to the Educational Committee for speakers and for mimeograph services.

University of Illinois, Extension Service—Director has asked the Committee to furnish short educational articles to the Home Bureau Advisers of 33 counties. These articles will be used at the monthly meetings.

Settlement House of Chicago—Director of Boy's activities has asked the Committee to help in health education by furnishing moving picture films, literature, posters and speakers on the health subjects to be emphasized during the winter.

MISCELLANEOUS

Physicians have made good use of our package library service and when we have not had the requested material in our files we have had the assistance of the American Medical Association library.

We have been invited to furnish an article on the work of our committee for publication in *Medical Economics*.

Through the courtesy of Mr. Thomas G. Hull, Ph. D., we were able to present our work in connection with the A. M. A. exhibit at the State Fair, Springfield. The following statement appeared in the Springfield State Journal, August 25, 1932:

"There is also a presentation of the facilities of the Illinois State Medical Society for doing educational work throughout the state. Literature, public speakers, radio lectures, publicity material and reading matter for debates and similar purposes may be obtained through this service."

Respectfully submitted,
JEAN MCARTHUR,
Secretary.

MEDICAL BROADCASTS FROM CHICAGO STATIONS

WGN—416.4 meters and 720 kilocycles.
11:50-12:00 a. m.:
Tuesday—Illinois State Medical Society.
Wednesday—Chicago Tuberculosis Institute.
Thursday—Illinois Society for Mental Hygiene.
Friday—Chicago Dental Society.
Saturday—Illinois State Health Department.
KYW—
3:15-3:30 p. m.:
Monday, Tuesday, Wednesday, Thursday, Friday—Chicago Department of Health, Dr. Herman Bundesen or member of staff.
WCFL—970 kilocycles.
10:15-10:30 a. m.:
Thursday—Dr. Herman Bundesen, Chicago Department of Health.
WMAQ—670 kilocycles.
Dr. Fred O. Tonney for Chicago Department of Health.
WJJD—1130 kilocycles and 265.3 meters.
11:30-11:45 a. m.:
Every morning except Sunday—Chicago Pediatric Society and Illinois State Medical Society—"Young Mothers' Hour."
12:00-12:15 p. m.:
Monday, Wednesday, Friday—Illinois State Medical Society.
WBBM—770 kilocycles and 389.4 meters.
10:45-10:50 a. m.:
Monday, Wednesday—American Medical Association.
10:45-11:00 a. m.:
Saturday—American Medical Association.
WLS—870 kilocycles.
One talk a week from October to May by physicians from the College of Medicine, University of Illinois.
WAAF—2:30-2:45 p. m.:
Friday—Illinois State Medical Society.

A BADGE OF IGNORANCE

If a dictator decrees vaccination, even the conscientious objector bares his arm. But the freeborn American citizen, if he chooses, may bear the proud scars of smallpox throughout his independent life, a monument to his ignorance and self-conceit.—Kendall Emerson, M. D.

Original Articles

THE DIAGNOSIS AND TREATMENT OF MENSTRUAL IRREGULARITY OF FUNCTIONAL ORIGIN*

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PHILADELPHIA, PA.

Abnormal menstruation may be the chief expression of diversified pelvic lesions of uterine, tubal or ovarian origin, but it may also occur in the absence of any demonstrable pelvic pathology, and such menstrual irregularities are included under the caption of functional uterine bleeding. For years its etiology was obscure and many theories were advanced to explain it. These had to do chiefly with alterations in the uterus, such as chronic endometritis, fibrosis of the myometrium, arteriosclerosis, malpositions, subinvolution, et cetera. In only rare instances was a possible ovarian origin given due consideration, although as long ago as 1882 Brennecke called attention to certain ovarian characteristics associated with a hyperplastic endometrium which he termed endometritis ovarialis. Gradually, with our increased knowledge concerning the physiology of menstruation, the uterine changes above mentioned have been largely thrown into the discard, until at present the view is generally accepted that endocrine disturbances are the chief factors in the production of these menstrual anomalies and that alterations in the uterus are but an expression of this deranged hormonal activity.

There is no chapter in gynecology of more intense interest nor one that has yielded more brilliant investigative results than that dealing with the physiology of menstruation. While there is still much to be learned, the contributions of the past few years have added enormously to our understanding of this vital function and, as a corollary, to the explanation of the varied clinical manifestations associated with perversion of this function.

The modern conception of normal menstruation may be briefly summarized as follows: Of the various hormones elaborated by the anterior pituitary, two are of prime importance in that, as the result of their stimulating effects, the functional activities of the ovaries are inaugurated. Prolan A is responsible for the ripening and maturation of the Graafian follicle and Prolan B activates the luteinization of the follicle with the formation of the corpus luteum. So important is this function of the anterior pituitary that it has been aptly termed by Zondek the "motor of the ovary." With the occurrence of pregnancy, enormous amounts of the anterior pituitary hormones, particularly Prolan B, are elaborated, and it is upon this phenomenon that the Ascheim-Zondek and Friedman pregnancy tests are based. Stimulated by Prolan A, the Graafian follicle begins to ripen shortly after menstruation has ceased and the process is completed with rupture of the follicle on about the twelfth to the fourteenth day of the intermenstrual period. Under the influence of Prolan B, the follicle is transformed into the corpus luteum, which gradually increases in size and maturity until shortly before the onset of the next menstrual period. Both the follicle and the corpus luteum are essential to the preparation of the endometrium for normal menstruation and for the reception and implantation of the impregnated ovum. Each of these bodies possesses its specific hormone; that of the follicle, known as oestrin, folliculin, theelin or the female sex hormone, is responsible for the earlier proliferative, non-secretory phases of the endometrium and prepares the way for the final secretory or premenstrual phase, which can occur only in the presence of the corpus luteum hormone, progestin. In a measure, these hormones are antagonistic in that progestin inhibits follicular activity, but, on the other hand, the sensitizing action of oestrin is essential as a preliminary process to the final consummation of the endometrial changes characterizing the secretory phase which progestin alone can induce. If pregnancy has not occurred, the corpus luteum undergoes retrogression and menstruation follows with exfoliation of the superficial layer of the endometrium.

Based upon these well established facts, theories as to the causation of irregular menstrual bleeding of functional origin can be readily formulated and clinical as well as experimental investigations have proven the correctness of these deductions. In brief, it can be stated that such bleeding is due to some defect in the rhythm of pituitary function or to alteration in its hormones which affect the follicular or corpus luteum apparatus of the ovary. With

*Presented before Joint Session, Illinois Medical Society, May 17, 1932, Springfield, Ill.

normal pituitary function, a defective ovarian response to its hormonal stimulation may lead to the same result.

All cases of functional uterine bleeding cannot be ascribed to identical hormone defects, but in the majority, excessive or prolonged follicular stimulation and diminshed or absent corpus luteum activity are characteristic features. Evidence of these facts is afforded by examination of the ovaries, which contain single or multiple follicular cysts of varying size, and the corpora lutea are not present or exist as immature structures. According to Schroeder, the follicular cysts represent an abnormal persistence of the ripening follicles in which the ovum continues to live but ovulation does not occur; Meyer, on the other hand, ascribes them to follicular atresia incident to premature death of the ovum. In either event, corpus luteum formation is prevented and prolonged activity of the follicles results.

Clinical as well as experimental evidence is at hand to warrant the assumption that the ovarian changes are ascribable to some alteration in the function of the hypophysis. Whether they are the expression of hyperfunction, hypofunction or some altered relationship existing between the hormones elaborated by the anterior pituitary remains a controversial subject.

The characteristic ovarian picture as well as the clinical fact that cessation of uterine bleeding results either from lessening pituitary activity by irradiation or from supplying it by the administration of the luteinizing hormone, indicate a lack of coordination between the two hormones or the excessive elaboration of the one at the expense of the other.

The endometrium responds to its perverted hormonal stimulation by failure to pass through its normal cyclic transformation, remaining more or less stationary in the proliferative stage; the premenstrual secretory phase and exfoliation which are dependent upon corpus luteum activity and regression are lacking. In a small proportion of cases, the proliferative changes become so extensive as to assume the form described by Cullen and Novak as hyperplasia, which is characterized by a marked thickening of the membrane due to an increase in glands as well as stroma. The glands are irregular in size and contour, they are often dilated forming the so-called "swiss-cheese" pattern, and secretion is absent. This picture of the noncyclic endometrium is by no means found in all cases of functional bleeding, which suggests that some factor other than the ovary is active in its production and probably originates in the pituitary or thyroid.

Clinical Characteristics. Functional bleeding may occur at any age from puberty to the menopause, but is most common during the fifth decade of life.

AGE INCIDENCE

Age	No. Cases	Percentage
Less than 20 years	20	5%
20-30 years	87	22%
30-40 years	98	25%
40-50 years	158	40%
50-60 years	31	8%

The fact that functional bleeding may occur after the menopause has been established is of biological and clinical interest. In our study of 394 cases, twelve had passed the menopause and the endometrium in two showed hyperplasia. If the prevailing conception is correct that endometrial hyperplasia is due to persistent follicular stimulation, it is difficult to explain why it should occur in the post-climacterium when the ovaries are atrophied and functionless. Taylor suggests that these hyperplastic changes are "but remnants of a typical hyperplasia persistent since the menopause," but it seems unlikely that this structure alone should escape the atrophy found in other pelvic organs. That it may be of hormonal origin is suggested by Frank's statement that "in a number of women long past the menopause the hormone content of the blood was exactly as we find it in young menstruating women." In this connection the experimental work of Hartman and his associates is particularly suggestive since they have shown that in castrated animals, hyperplasia and uterine bleeding can be produced by administration of the hormones of the anterior pituitary. Fluhmann's demonstration of increased pituitary activity after the menopause adds another link to the chain of evidence favoring the hormonal origin of certain cases of post-climacteric bleeding.

The following analysis of our cases demonstrates the many different types of bleeding which may occur:

TABULATION OF THE TYPE OF FUNCTIONAL BLEEDING IN 383 PATIENTS

Menorrhagia—148 patients—38%—

A—Profuse menstruation with normal intervals...51—13%

B—Profuse or prolonged menstruation with shortened intervals .....97—25%
Metrorrhagia—235 patients—62%—
C—Totally irregular bleeding.....65—17%
D—Regular periods—followed by continuous bleeding .....27— 7%
E—Irregular periods—followed by continuous bleeding .....48—13%
F—Progressive menorrhagia to metrorrhagia.....34— 9%
G—Amenorrhea followed by continuous bleeding..45—12%
H—Mid-interval bleeding with normal periods.....16— 4%

Although as a group, the metrorrhagias predominate, the profuse or prolonged periods with shortened intervals form the most common individual type, corresponding with Shaw's findings in his analysis of 200 cases. Another type frequently encountered is that in which the periods exhibit no semblance of regularity either in the appearance, duration or quantity of bleeding; they may appear at long or short intervals and the flow is at times profuse, at others small in amount. Of particular interest from the diagnostic standpoint, as will be mentioned later, is the type characterized by a succession of normal periods, a few weeks or months of amenorrhea, and the onset of continuous bleeding.

In reviewing our cases of functional bleeding, we have observed that many patients give the history of menstrual irregularity often dating back to the time of or shortly after puberty. This may be expressed by intervals of amenorrhea, prolonged or unduly profuse periods, a shortening of the inter-menstrual interval and most commonly, perhaps, a life-long tendency to menorrhagia.

With but little or no demonstrable pathology, one is at a loss to explain satisfactorily the profuse and, at times, alarming hemorrhage which functional disturbances alone may produce. Schroeder, Fluhmann and others ascribe the bleeding to areas of necrosis or injury to large superficial vessels in the endometrium; Novak states that increased permeability of the blood-vessels must be considered as a possible cause, but seems more inclined to ascribe it to some extra-pelvic influence, what he terms the "bleeding factor" with which the hypophysis may be intimately concerned.

Pelvic pain is rarely an associated symptom in uterine bleeding of the purely functional type; dysmenorrhea is likewise uncommon but may accompany profuse bleeding with the passage of clots. When pain is present, some organic lesion, such as chronic adnexal infection or endometriosis should be suspected.

The characteristic feature of the pelvic examination in cases of functional bleeding is the absence of gross pathology. Often, however, certain minor changes are detected. The cervix may be somewhat softened, slightly dilated and faintly discolored; increased succulence may also be manifest in the vagina. Moderate, diffuse uterine enlargement is not uncommon and in a considerable proportion of the cases one or both ovaries will be found larger and perhaps more tender than normal, due to the presence of single or multiple follicular cysts.

The diagnosis of functional bleeding is usually a simple matter; irregular menstruation with normal pelvic findings can be explained in no other way. A small submucous myoma, deeply placed and concealed by the overlying uterine musculature, may give rise to identical symptoms and may easily escape detection. However, its presence is usually indicated by irregularity in the contour and consistency of the uterus or the curette may reveal its protrusion into the endometrial cavity. Irregular bleeding is commonly associated with a chronic adnexitis, and is due in large part to defects in ovulation incident to a peri-oophoritis. A history of previous acute pelvic infection, the characteristic stigmata of chronic gonorrhea, slightly enlarged, adherent adnexae and pain usually point the way to a correct diagnosis. Even the minor lesions of endometriosis may give rise to irregular bleeding, but one or both ovaries may be enlarged, nodular and adherent; small nodulations are often palpable in the cul-de-sac and an acquired dysmenorrhea of the menstrual or premenstrual type is a characteristic symptom. In each of the lesions just mentioned, altered ovarian function is a potent factor in the production of irregular menstruation, but this functional disturbance is secondary to or associated with an organic lesion, which often requires treatment of an entirely different nature from that appropriate to true functional bleeding, hence the importance of their differentiation.

As already stated, softening, dilatation, and even slight discoloration of the cervix may exist in these cases and when such findings are associated with a history of amenorrhea followed by prolonged bleeding, differentiation from an early miscarriage is difficult or even impossible without a curettage. A polycystic ovary or a single follicular cyst is not uncommon in func-

tional bleeding; rarely, such ovaries are exquisitely tender and may produce sharp attacks of pain. Under these circumstances, a history of amenorrhea and continuous bleeding presents a clinical picture so closely simulating that of tubal pregnancy that the exact nature of the lesion can be ascertained only by an exploratory incision.

Carcinoma of the fundus is essentially a post-menopausal disease, but an analysis of the cases from our clinic made by Norris and Vogt shows that 17 per cent. were of pre-menopausal age. Its differentiation from functional bleeding is made possible only by a diagnostic curettage and examination of the curettings by a pathologist thoroughly familiar with the manifold histologic pictures which the endometrium may present under both normal and pathologic conditions. Many a uterus has been removed needlessly under the mistaken diagnosis of malignancy, made by a pathologist unskilled in this particular field.

In rare instances, functional bleeding occurs as a post-menopausal manifestation, but this diagnosis should be made with reservation and only after the possibility of uterine or adnexal carcinoma has been eliminated by all available methods of examination. In this connection, granulosa cell carcinoma of the ovary deserves particular mention, since it often develops after the menopause and is characterized by a return of bleeding and hyperplasia of the endometrium.

Irregular menstruation may be but the local expression of some constitutional condition such as cardiovascular disease, chronic nephritis, hypertension, blood dyscrasia, et cetera, and such possibilities should be eliminated before the diagnosis of true functional bleeding is made. Diminished activity of the thyroid gland may produce menorrhagia, but, conversely, our experience has shown that patients with functional bleeding usually present no striking evidence of thyroid abnormality. In the functional hemorrhages of adolescents, Plass emphasizes the fact that even minor degrees of hypothyroidism are significant, and that the "cautious use of thyroid extract, even when the basal metabolic rate is not particularly low," often controls the bleeding.

A discussion of the diagnosis of functional bleeding would be incomplete if we did not refer to the various hormonal tests which have been elaborated during recent years. These tests are of the greatest scientific value, they have contributed largely to our present knowledge of female sex physiology and pathology, and their further elaboration will doubtless clarify many phases of the subject which are now obscure. We consider these studies of such importance that a department devoted entirely to this work has been established in our clinic at the University Hospital. To many physicians, these facilities are not available and the question must naturally arise—are such tests necessary for the diagnosis and treatment of functional bleeding? This question can be answered in the negative. We believe a curettage is advisable in most cases, particularly in women of menopausal age. By this means, evidence is obtained which permits of certain deductions concerning the hormone at fault, the question of malignancy is definitely answered, and in a few cases the procedure will be of therapeutic value.

In many of the milder forms of functional bleeding, the blood loss is insufficient to require treatment or it may respond to medication so well known as to make its discussion unnecessary. Change of climate, occupation or mode of living will occasionally be followed by a resumption of normal menstruation, or the menstrual irregularity may cease for no explainable reason. In cases of profuse or prolonged bleeding, these remedies are usually of little or no avail and more drastic measures are called for to stop the blood loss. We would call attention to the value of blood transfusion in the treatment of adolescent hemorrhage. Our own experience, together with that of others reported in the literature, shows that this measure may induce a temporary amenorrhea or restore the menstrual periods to normal.

For many years curettage was advocated on the erroneous assumption that the cause of the bleeding lay in the endometrium. Although our present-day knowledge casts discredit upon this procedure as a therapeutic measure and explains the frequent failures attending its use, the fact remains that curettage may be efficacious and has a place in the treatment of functional bleeding. This applies particularly to the hemorrhage of young women in whom more drastic measures such as irradiation or hysterectomy are undesirable.

The advent of radium has contributed in large measure to our therapeutic armamentarium, for

by its use the functional hemorrhages of the menopause can be readily controlled and the risks of hysterectomy are avoided. At this age, sterility and loss of ovarian function are matters of no great concern and a full menopausal dose can be given. With younger women, however, the problem is entirely different, for here cessation of ovarian function may be attended by dire consequences. When other measures have failed, we have frequently applied small doses of radium in young women, and our results have been such as to warrant its continuance until a better method is available. Should a submenopausal dosage of radium fail to control the bleeding, a hysterectomy with conservation of the ovaries is preferable to more intensive irradiation; with operation, ovarian function is maintained; with irradiation it may be permanently destroyed.

Curettage, irradiation and hysterectomy are all far from ideal procedures in the treatment of functional bleeding, but until recently no other measure has proven of sufficient value to displace them. Heretofore, with the exception of thyroid extract, organotherapy has been futile, but during the past year hope has been aroused by the reports of Novak and others that at last a preparation has been found which gives promise of success. This preparation is obtained from the urine of pregnant women which is rich in the anterior pituitary hormones; theoretically, its administration should stimulate the process of luteinization in the ovary which is characteristically absent in functional bleeding. In his original report, which appeared during the past year, Novak states that in 44 out of 51 cases the bleeding was checked; he tells me that subsequent experience in a much larger number of patients has been equally satisfactory. Mazer of Philadelphia, whose contributions to this field of investigation are outstanding, considers this anterior pituitary luteinizing substance as a specific in the treatment of functional bleeding in young women. In the menopausal age, however, the treatment has not been successful, since it failed to control the bleeding in 13 out of 15 patients. Based upon these favorable reports of Novak and Mazer, as well as our own experience in a small number of cases, we are encouraged to hope that with this substance we have at our disposal a measure which will be of value in solving the heretofore difficult problem of relieving the functional hemorrhages of adolescents and young women.

PRIMARY GLAUCOMA MANAGEMENT*

MICHAEL GOLDENBURG, M. D.†
CHICAGO

It would be well to first define what we mean by primary glaucoma. This would appear to be a simple question and yet any definition offered would be found wanting in some way or another. The probabilities are, that all types of glaucoma with the possible exception of the non-congestive or so-called simplex type are secondary, but secondary to what, is an open question difficult to answer. The classical definition of secondary glaucoma will probably better define what is meant by the primary form. Therefore, for the purpose of this paper we will discuss that form of elevated intra-ocular pressure for which we find no manifest evidence of ocular disease, trauma or neoplasm and apply the term primary glaucoma to this group.

Of this primary form we have two types, the non-congestive or simplex type and the congestive or inflammatory type.

With this classification in mind we can proceed to the object of this paper.

In the treatment of this form of glaucoma one of two methods is open to us, that is surgical and non-surgical. The non-surgical treatment has many adherents and some even go so far as to say that a case that responds to surgery would have done as well under a non-surgical regime, and those that do not respond to non-surgical methods will not respond to surgery. This, is of course open to much debate, but is surely not the opinion of most authorities. It of course depends on what you mean by a cure, the relief of the immediate or permanent symptoms, or the removal of the cause. The patient is pertinently interested in the relief of the symptoms and the probable prognosis. The relief of symptoms in some cases can be accomplished without surgery, but the responsibility of a prognosis in these cases few physicians of experience are willing to assume. Many physicians feel that non-surgical management is indicated in the non-conges-

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tive type (glaucoma simplex) and in the early stages of the congestive type (inflammatory) that is, if the tension remains within reasonable normal limits and the perimetric fields do not show progressive contraction. If we were assured of intelligent cooperation of the patient, one might accomplish much, but it is regrettable that this cooperation is neither dependable nor intelligent even in the so-called intelligent classes. And as far as the average patient is concerned it may be readily dismissed; therefore, to advocate a non-surgical regime one must thoroughly impress the patient with the seriousness of the condition and the probable prognosis.

Non-surgical Management: What may we hope to accomplish and what may we expect? Much in some carefully selected cases, but very little in the vast majority. Given a case in the very early stages, in an individual between the late 30's and late 40's an attempt should be made to control the condition by this form of management, but only after making a very extensive study of the individual case. By that I mean not merely an ophthalmic study, but a complete physical and laboratory investigation. (The highest type of cooperative study in these cases is necessary.) It is naturally understood that any pathologic findings should be corrected if possible. I do not wish to go on record, as saying that every possible source of focal infection should be removed, but I do wish to emphasize that such foci must be seriously considered. In addition to such corrections one should give some thought to the appetite of these people, physical, emotional and dietary. One may say that a non-stimulating diet, probably favoring the carbohydrates in preference to the proteins would be indicated. However, we know so little about diet in these cases that it would be well to make no definite statements, and what is said, should be only done in the form of suggestion. We may say quite definitely that dietary abuses should be corrected. In regard to the emotions, again much may be said and yet we have no information that warrants a positive statement. We do know that the emotions have a marked influence on the endocrine functions or as some contend that the endocrines influence the emotions, that particular phase of the question is debatable, but the sum total of the question is accepted as influencing glaucoma. It is interesting to note, in the female at least, how frequently one can trace the prodromal symptoms of glaucoma to the menopause stage. That the endocrines may be of much import in the precipitation of glaucoma symptoms one may concede, but unfortunately we still lack the information necessary to say that this or that or any group of glands are at fault.

The ophthalmic study resolves itself into careful tonometric, perimetric, and ophthalmoscopic investigation and recording. Ophthalmoscopic examination should be made with a dilated pupil. If you are timid you may use a solution of euphthalmine, I prefer the use of homatropine if the congestive symptoms are not marked or the tension not too high. It is well worth while knowing if you can or cannot aggravate the symptoms by its use. To me it is just as important as knowing how rapidly the symptoms can be controlled by eserine. An iris that rapidly responds to eserine and rapidly reduces the intra-ocular pressure would appear to be a favorable case for non-surgical management. Such cases, however, do not seem to stand eserine so well over a long period, therefore, one should depend more upon the pilocarpine salts. I prefer these drug tests to the so-called light sense dark-room and intra-venous injection tests of various drugs.

I have on many occasions seem elevated intra-ocular pressure reduced after the use of homatropine.

Medicinal Therapy: From the standpoint of drugs for the purpose of controlling the intra-ocular pressure, eserine and pilocarpine are still preeminent. Our friend glaucosan has passed on to the land of limbo as have so many panaceas of the past. In an emergency one may resort to hypertonic solutions of magnesium sulphate or sodium chloride by proctoclysis or intravenous injections of glucose solutions. This incidentally is an excellent procedure to follow before operating especially where the tension is high and choroidal hemorrhage feared.

One may add that this form of investigation and management is also indicated when surgery is resorted to, because any surgical procedure used does not remove the cause of the glaucoma, it only attempts to control the symptoms resulting from the elevated intra-ocular pressure.

By this method we may be able to postpone

operation in some cases for many years and in a few throughout life. If at any time the tension is not controllable or the perimetric fields show progressive contraction, surgery must be resorted to as soon as possible. In some cases the tension may remain within reasonable limits, but contraction of the fields may go on. In such cases if we can rule out factors that involve the optic nerve other than that due to the intra-ocular pressure we should operate.

In the use of miotics there is no hard and fast rule to follow as to dosage and length of time to be used other than just sufficient to keep down the tension.

It is safe to say that eserine as a rule is not well tolerated over a long period; pilocarpine acts more favorably. Combinations of these two frequently act favorable where the tension is high and the individual drugs have lost their potency.

Surgical Management: This resolves itself into, when shall we operate, what may we expect and what will be the prognosis?

As far as we know today, all the symptoms can be the result of the elevated intra-ocular pressure. The various arguments relative to the factors responsible for the elevated intra-ocular pressure, that is, increased fluid production or decreased fluid escape, etc., is pertinent to the question but not to the object of this paper; therefore, that question need not be reviewed at this time.

When shall we operate? Preferably between attacks, and when the intra-ocular pressure cannot be maintained within reasonable normal limits by miotics and systemic attention and when the perimetric field continues to show contraction.

The role of surgery is to do that which will reduce this pathologic intra-ocular pressure and the operation to be used, is that one which will with the least manipulation accomplish this result and maintain it over the longest period.

Many operations have been devised for this purpose, all of which must fall into one of two classes. In one class we have those operations that attempt to reestablish the functions of the so-called natural channels of fluid escape, that is, the spaces of Fontana and the canal of Schlemm, granting for the purpose of this paper and the moment, that they are the all important channels through which the aqueous must leave the eye ball. In this class must fall all the iridectomy operations, the classical broad iridectomy, deep iridectomy and their many modifications. In this class must also fall the cyclo-dialysis operation of Heine and its modifications.

In the other class we have the decompression sion operations, in which an attempt is made to divert the direction of flow of the intra-ocular fluids from these chambers into the subconjunctival spaces through a surgical opening. In this class we have the La Grange operation and its many modifications, e. g., the scleral wedge of Herbert, the trephine of Elliott and Fergus, etc. In this class should also be included the iridotasis operation of Critchett popularized by Borthen and others, the Zorab seton operation, and in all probability the iridencliesis operation of Holth.

What may we hope to accomplish by an operation and how is this hope to be fulfilled is, of course, the all-important question.

If we still adhere to the conventional or classical teaching and most of us do, namely, that the drainage angle is the crux of the entire glaucoma problem, then only one method of procedure is open to us,—that is surgery directed to overcome the pathology existing here.

Many of us still believe in the fanciful but alluring pump action theory of Thompson and insist that the aqueous must enter the canal of Schlemm before the pathologic pressure can be reduced. This writer does not believe that the so-called scleral spur can move so as to function according to the Thompson theory. But he does believe that in the normal eye the meshwork of the drainage angle does function as a dializing membrane and thus permits the aqueous to find its way into the canal of Schlemm. Unfortunately, the meshwork of an eye suffering from glaucoma is rarely normal when it reaches the physician who makes the correct diagnosis. The exception may be in the simplex type (non-conjective). As a rule when such cases reach the physician peripheral iris synechiae are already formed and the meshwork leading to the canal is compressed and therefore impermeable, thus blocking off the entrance to the canal. These peripheral iris synechiae which are usually present in the congestive or inflammatory type may be located in any one part or throughout the

entire circumference of the limbus. To be able to tell just where these synechiae are located would be a decided advantage and might be ascertained if everyone possessed a Troncoso gonioscope, knew how to use it and the patient a living phantom! Unfortunately, that is rarely the situation, but we have in the past and still continue to do whatever operation we may use, in the region of 12 o'clock at the limbus, (the cyclodialysis operation excepted). The advantages of operating in this particular region is well known and reasonable. But by what method of reasoning may we conclude that the synechiae blocking the entrance to the canal of Schlemm are located at this particular point, there is no such tangible evidence. To this idea there is no serious objection, but we must not delude ourselves and feel that by an iridectomy at a definite point we are reopening the blocked entrance to the canal of Schlemm. At best it is a haphazard guess that synechiae are present or absent at this particular point; as a matter of fact, they may be located here or in any part or throughout the entire circumference. It is, therefore, unreasonable to feel that the result (which may be good) obtained from such an operation is due to the re-establishment of drainage into the canal of Schlemm. I do not recall seeing a single microscopic slide or microphotograph which convinced me that the aim of the operation had been accomplished, that is reduction of the peripheral synechia. I do not mean to condemn the iridectomy operation, because results from this procedure are probably as good if not better than most other operations that aim to reestablish drainage into the canal of Schlemm.

We can say fairly definitely that the results obtained from any mode of iridectomy operation do not re-establish drainage through the spaces of Fontana and into the canal of Schlemm.

We may further say that if any operation can accomplish this purpose then the cyclodialysis procedure of Heine should be able to do so. Here an instrument (spatula) is passed through the sclera, posterior to the ciliary zone made to hug the sclera until it finds its way into the anterior chamber and then by a sweeping motion is the ciliary body separated from its scleral attachment. In this operation we can say that if the peripheral anterior synechia can be separated in a definite sector of the circumference it may be accomplished in this manner. But the advocates of this technique only claim that they give the aqueous an opportunity of entering the suprachoroidal spaces and do not stress the factor of opening the normal channels. My personal experience with this operation is not extensive, I tried it in about 12 or 15 cases many years ago and the results in my hands were not conducive to its continued use. In central Europe and Japan they still advocate its use. Its popularity in Europe is probably due to the marked preponderance of the non-congestive type (simplex) of glaucoma over the congestive or inflammatory type that is most frequently seen throughout our central states.

I am inclined to think, that it is for this reason that in Germany and Austria in particular, this operation is popular and owing to that popularity and the results obtained, is the theory set forth that the non-congestive or simplex type and congestive or inflammatory types are not due to the same factors, but entirely different diseases. I have seen too many cases pass through the stages of the non-congestive or simplex type into the congestive or inflammatory type. Some of you may recall a case I presented before the Chicago Ophthalmological society a number of years ago; this was beautifully demonstrated during the presentation. The case was presented because of the typical picture and history of glaucoma simplex in the presence of a coloboma of the iris in the region of 12 o'clock. During the examination and discussion while gathered around her, the woman apparently became impressed that something of a very serious nature existed and the cornea became cloudy and stippled so that her fundus could no longer be seen clearly; this was followed by ciliary injection.

Relative to the iridectomy operations it is my belief that the results obtained are due to the presence of iris fragments in the limbal wound which act as a drain into the subconjunctival spaces. I am aware that the advocates of the deep iridectomy operation absolutely deny this to be a fact; furthermore, I have seen the clinical results in such cases where I could not maintain my position. But I have also on many occasions seen just such results following a decompression operation where one could not detect any

evidence of iris incarceration. Many years ago this writer in trying to account for the brilliant results so frequently reported for the various operations from time to time came to a conclusion and presented a thought before this society that is still worthy of consideration. That is, that whatever technique is used is probably not as important as the fact that when the normal anatomic relations of the iris are disturbed, something happens that seems favorable to the intra-ocular pressure. The iris vessels and probably the crypts of Fuchs being released from a comparative fixed state may with the emptying of the anterior chamber be able to again function as a dialyzing membrane. I am inclined to think that results obtained in the cyclodialysis operation is more due to this factor than the supra-choroidal drainage; as a matter of fact, the supra-choroidal spaces are poorly developed for this purpose. But this changed state of vessel environment is also not of permanent value and we find the enthusiasm of these various surgeons for a particular technique somewhat diminished as years go by. I am convinced that we are at this time unable by any technique so far devised to reestablish these so-called functions of the spaces of Fontana and canal of Schlemm when peripheral synechiae have once been formed. Even in the time of von Graeffe and de Wecker was this thought seriously considered and we find Critchett in 1857 attempting to do a decompression operation (iris inclusion) for the purpose of draining direct from the anterior chamber into the subconjunctival spaces.

It would appear that until we know more about the etiology of glaucoma we will be compelled to resort to surgery to overcome this elevated intra-ocular pressure and it would seem that the decompression operations offer a more positive drainage at this time. *All decompression operations* are fundamentally based on the same principle, in one a section of firm tissue is removed, in the other we have the lips of the wound separated by some form of drainage tissue. The La Grange operation still has many advocates and the modifications can be used with much advantage in many cases. The Herbert wedge operation is not radically different basically from the La Grange procedure, but is not used to any extent in this country. The Elliott and Fergus trephine operations are likewise very similar to the preceding operations; in one an elongated section of the limbus is removed and in the other a round section is used. Basically they are the same and as a matter of fact the results are very similar in the hands of equally competent surgeons who have developed a personal technique. The Fergus operation is not well known in this country, but if this writer were to return to the trephine technique he should favor the details suggested by Fergus.

Then we have left the operations in which some form of tissue is interposed between the lips of an incision at the limbus. Many different tissues have been used for this purpose and some have even advocated the introduction of some foreign material, e. g., horse hair, silk suture material, etc., as in the Zorab operation. Of all operations devised in this class the iris incarceration operation is the oldest and probably the most popular today. This was first introduced as far as we know by Critchett in 1857 and revived by Borthen some 25 or 30 years ago and has been consistently used by him since that time. This writer has used this operation for over 12 years with certainly less grief than any other operation so far devised. The simplicity of the technique, the rapid results, the short period of hospitalization and after care must appeal to the surgeon. The startling results obtained in my first series of cases which consisted of totally blind, painful, red eyes that we usually submit for enucleation, impressed this writer most emphatically. In this series, the pain disappeared, the eyes became white and the pressure was markedly reduced and this writer is still of the opinion that the best artificial eye on the market is neither as comfortable or decorative as a natural but blind eye. Here again the criticism comes up as to just how the fluids are drained off. Borthen still lays more stress on the factor of the traction of the iris upward which opens wider the spaces of Fontana below and thus permits freer access to the canal of Schlemm. In the great majority of my cases, definite subconjunctival drainage is apparent. In the non-congestive type (simplex) subconjunctival drainage is not always demonstrable, but this writer firmly believes that if any intra-ocular drainage takes place it is in the form of renewed fluid interchange between the aqueous and the capillaries of the uveal tract. Here

again may the factor previously referred to as a changed vascular status conducive to dialization, and fluid equilibrium come into play. In a few cases this writer has been compelled to reoperate; the results as a rule have been favorable where it has been possible to incarcerate another part of the iris. Where this fails then may one resort to a small modified La Grange or similar operation. Much has been said of the danger of incarcerating iris tissue in a rigid limbal wound. In an experience of over 12 years with several hundred cases by this technique I have as yet to note any findings that can in any way maintain this criticism. The iris changes noted in some cases after a number of years consists of disappearance of the pigment epithelium of the pupillary margin in the region of the operated field and in very bad cases some scattered patches of iris depigmentation may be seen.

The iridotasis operation is not a cure for glaucoma, no more so than any other surgical procedure; it merely overcomes the symptoms, it does not remove the cause, but it does better control intra-ocular pressure than any other operation this writer has used or seen used. The technique is very simple and the ability to use atropine sulphate freely is a decided advantage. We have slightly modified the original technique of Borthen but have introduced no radical departures, the principle remaining the same.

I have at this time a number of cases which have been under observation for many years that come in now and then and complain bitterly of symptoms which they describe as a sticking, like with pins. Examination discloses no diminution in vision or abnormal pressure, occasionally one will notice a little more edema of the conjunctiva during this period. It is my belief that in these cases during this time these individuals are suffering from an attack of symptoms that precede the elevation of the intra-ocular pressure and that the pin pricking sensation they feel is due to an excessive amount of fluid trying to escape through the limbal wound.

SUMMARY

1. No surgical operation for glaucoma so far devised can remove the cause, therefore, it cannot be considered as a cure.

2. In this writer's opinion, no operation can restore to normal function the so-called drainage angle, after peripheral iris synechiae have existed for some time.

Therefore, operations devised for this purpose must attain results in other ways.

3. The various decompression operations offer a more positive avenue of fluid escape and in addition favors fresh aqueous formation.

4. In this writer's experience the iridotasis operation accomplishes the desired results with less danger to the eye owing to the simplicity of the technique necessary.

DISCUSSION

Dr. Harry Woodruff, Joliet: Dr. Goldenburg raised a number of questions, as he always does, on this subject. One thing that struck me very definitely, that is in connection with the slide showing the adhesion of the iris to the cornea in the region of the corneosclera. The point I want to make is this; your operation should be done before you get these adhesions, because when you arrive at that stage you have arrived at a place where you have a lot of pathology in the eye, and no operation will offer much. Therefore, be careful about recommending pilocarpin or eserin as anything but a temporary remedy. I believe very strongly, no matter what the condition is regarding congestion, or what Dr. Goldenburg has said with reference to deferring operation until the acute symptoms have subsided, I do not believe in doing that; I believe in giving general anesthesia and doing the operation at once. Glaucoma is a symptom, a symptom is a part of a disease, is it not? And it is the essential part of this disease. When you have a congestion of the ciliary body that leads up to tension, it makes no difference if you have, tension must be relieved, because an eye will not tolerate that tension very long without the occurrence of the results he has described. I believe that to a lesser extent the same thing applies in glaucoma simplex. If you do an operation, peripheral deep iridectomy before you have the changes, you will save the eye as you do in inflammatory glaucoma. Many years ago De Wecker said, "where eserin has perhaps saved a few eyes from blindness, it has prevented many more from being saved." So I say that eserin or miotics generally are only for temporary use. The operation should be performed as early as can be done in these two types of glaucoma, acute inflammatory and chronic simplex.

Dr. Richard J. Tivnen, Chicago: While motoring down here with Dr. Harry Woodruff, his son, Dr. George, and Dr. Geiger, I asked them this question: "What eye disease causes us the most anxiety?" The unanimous verdict was "glaucoma simplex." I am sure most of us will agree with this verdict. Dr. Goldenburg has given us an excellent resume of glaucoma. There is indeed little one may add to his thorough presentation. There are always two phases of its therapeutic management which provokes wide diversity of opinion, first the comparative merit of the medical

versus the operative treatment, second the type of operation performed and when. I am in agreement with Dr. Woodruff's view that the time when the case comes under observation, that is the stage of development the disease has reached when we first see the case, is the basic determining factor in our selection of a therapeutic procedure. What to do for the patient who already is a victim of this baneful disease is always an intensely interesting matter. Apart from this there is another phase of the subject which is almost equally interesting and deserves emphasis. Experience has demonstrated that there is a rather large group of folks whose general physical make-up and ocular complex predisposes them to attacks of glaucoma. One might aptly borrow the well-known political phrase and label this group "receptive candidates" for the disease. Is it possible for us to recognize these so-called "candidates" early and if so have we any dependable plan of management which will protect them from attacks? The answer is "yes" to both queries. What is the nature and rationale of the service we have to offer this class of patient? The answer is that it is based on a thoroughgoing routine plan of investigation of the patient's general physical condition, his ocular status and an intensive checking up of all the recognized theories of the causation of the disease. Brief excerpts of the observations of authors of experience, taken from Wood's Encyclopedia of Ophthalmology are of interest in this connection. Maitland Ramsey, for example, states, "the disease is not to be looked upon as a morbid entity but as a symptom complex; and its true nature will all the better be understood if one thinks of its acute manifestations as analogous to an attack of angina pectoris. Its occurrences depend not only upon the size and immediate structure of the eye-ball but also upon the age, race, and general health of the patient." It is commonly associated with nervous affections, cardiac disease and circulatory disturbances of chronic intoxications. Sleeplessness, worry, bronchitis, influenza and neuralgia of the fifth nerve are common exciting causes. Focal infections in the upper respiratory tract—teeth, tonsil, nasal accessory sinuses—as well as general systemic foci of infection are regarded as factors. Age is an outstanding predisposing cause. It rarely occurs before 40; it continually increases up to and during the seventh decade so that between 60 and 70 it is more than twice as common as from 40 to 50. It occurs hereditarily in both the acute and chronic forms and it may be transmitted by either sex or inherited by either sex. Persons of the 'spare' habit and the 'dyspeptic' are more susceptible than the fat, robust and lymphatic. Females are more predisposed than males." Arteriosclerosis is regarded as a predisposing cause. One may quote at considerable length and restate many other additional facts along these lines which, of course, are well known to all of us. The only value in restating them is to emphasize that glaucoma is clearly a protean disease with its etiology not confined exclusively to the eye but having ramifications in the patient's general system and being influenced by his mode of life, his daily balances in the expenditure of energy and rest and between work and play. Due appreciation of all these factors also supplies us at once with the data with which we may organize our routine plan of investigation of these so-called "Candidates" for glaucoma. It seems clear, therefore, that if we are to offer any really constructive plan of prevention or to make any real substantial progress in the early recognition of these so-called "candidates for glaucoma" it is necessary that all your patients of middle life and beyond be put through an invariable routine program of investigation not alone of their ocular status but their general system as well. Such a routine would comprise first, a general physical examination with especial emphasis on the cardio-vascular, gastro-intestinal, nervous systems, the endocrines and the various sources of focal infection, teeth, tonsil, nasal accessory sinus; second a thorough eye examination including refraction, fundus, visual fields and tonometric tests; both of these examinations to be repeated at definite intervals. Such a routine plan is not, as we know, easy to put in operation in all cases. A large per cent. of patients in middle and advanced life consult us with only one thought in mind—that all they require is glasses for reading. Such patients are strongly adverse to undergoing such a detailed, and to them wholly unnecessary, time consuming ordeal. It is however in precisely this class of patients our greatest service may lie and no small amount of patience, detailed explanation and insistence is necessary to convince them of the wisdom of our plan. It can be done, however, and it should be insisted upon routinely. I shall have to disagree with my learned friend, Dr. Goldenburg, on the routine use of homatropin for diagnostic purposes. If possible, I refrain from using a mydriatic in these cases but if this be impossible, I prefer eupthalmin. It is also my custom to instill eserin, following a mydriatic, in every patient whatever the age.

Dr. Michael Goldenburg, Chicago (closing): Glaucoma has been a hobby of mine for many years and I have derived much pleasure and information from its study. I am aware that my views on the subject are not orthodox, but the orthodox viewpoint has made little or no progress in solving this problem. In reply to Dr. Woodruff's remarks relative to early operation, there is no question but what that would be more favorable. Unfortunately, the cases that come to us at the Infirmary are usually very late or blind. In the past few weeks two cases presented themselves with an intra-ocular pressure of 89 and 91 and vision limited to light perception.

Dr. Tivnen's suggestion for early diagnosis is, of course, the key to the situation. In private practice routine examination is possible, but in a large out clinic department it is not always practical. My personal routine consists of taking the tension by finger palpation and then followed by homatropine dilatation and complete fundus examination. If there is any indication of possible pathologic pressure we resort to the tonometer and later field charting.

I am not at all fearful of precipitating an attack of glaucoma by the use of a mydriatic. I feel that a case

that can be so precipitated will rapidly respond to eserine and the sooner the physician and the patient is aware of the condition the better will be the prognosis. I had such an experience recently in the wife of a physician, but on further study we found that her fields were contracted to the 20 degree circle and that she had a non-congestive or simplex type of glaucoma, probably existing for some time past.

THE DIAGNOSIS AND TREATMENT OF LARYNGEAL TUBERCULOSIS*

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If we educate ourselves to the importance of preventive medicine in the future, as we have done during the past twenty-five years, we can continue to reduce the death rate from preventable diseases, such as tuberculosis, even to a greater degree during the next quarter of a century. The prevention of laryngeal tuberculosis depends so largely upon an early diagnosis of pulmonary tuberculosis. Early discovery of the pulmonary disease, and proper rest, usually means early recovery and prevention of laryngeal complications. Greene[1] has recently urged early diagnosis. Therefore, the physician who sees a patient for the first time with cough, loss of weight, sputum, etc., does not do his fullest duty until he excludes pulmonary tuberculosis as a likely cause of the symptoms. Having educated our own profession to the importance of this early diagnosis we must next educate the laity.

One of the earliest objective symptoms of laryngeal tuberculosis is infiltration of the interarytenoid sulcus. This often resembles pachyderma of the larynx and does not always attract very much attention, especially if there is a history of chronic hoarseness for some weeks or months. However, it should attract attention and laryngeal tuberculosis should be excluded as well as pulmonary tuberculosis. Before there is infiltration in the larynx one may find marked hyperemia or congestion of the larynx and nothing else in patients who are coughing a great deal. This pre-tuberculosis appearance of chronic laryngitis in patients with a cough should always arouse a suspicion of pulmonary tuberculosis.

Other patients who have had pulmonary tuberculosis for some time and who have a secondary anemia, which is so common with the pulmonary form of the disease, may show a mottling of the larynx. There are small pink areas alternating with pale areas. These not only show in the larynx, but they also show over the mucous membranes of the pharynx and soft palate.

My chief, at the Medical Department of the University of Colorado, Dr. Robert Levy, has often emphasized the importance of the anemia and hyperemia as pre-tuberculous manifestations in the mucous membranes of the upper respiratory tract, particularly in the pharynx and larynx.

A small papilloma may appear in the larynx which is really a tuberculoma when caused by tubercle bacilli. We know the preference of tuberculous lesions for the posterior half of the larynx in contrast with the frequency with which carcinoma involves the anterior half. A small papilloma in the larynx, especially in an adult with a cough, should not be accepted as a papilloma until the patient's condition has been very thoroughly studied from every angle.

Ulcerations in the larynx represent a later stage of the disease. They may be acute or active; chronic or sluggish; and, superficial or deep. They are far more likely to be superficial at first and rather sluggish. They often have mouse-nibbled edges and are not always very easily recognized. If the patient complains of pain it is often better to spray the larynx with a 3 per cent. aqueous solution of cocain, wait ten or fifteen minutes for this to take effect and then spray the larynx with some mild alkaline solution to wash the mucopus from the ulcers as much as possible. Following this a 2 per cent. aqueous solution of fluorescein should be sprayed into the larynx. The fluorescein will stain even superficial tuberculous ulcers a light green color and they can be more easily recognized.

Deep ulcers usually result from a deep tubercle which has ruptured spontaneously on the surface. These tuberculous ulcers also often have mouse-nibbled edges. They do not have the deep punched-out appearance of syphilitic ulcers.

Multiple tubercles in the larynx often produce an edema which Sir St. Clair Thomson[2] prefers to designate as pseudoedema. This is particularly likely to show in the arytenoids and in the aryepiglottic folds. This edema may give rise to

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the so-called club-shaped deformity of an arytenoid. This club-shape is not pathognomonic of tuberculosis, as formerly accepted, but may be caused by syphilis.

Nature tries to produce in the larynx the same condition she produces in the lungs, unless the disease is progressing too rapidly, and that is fibrosis. Fibroid changes in the larynx often go hand in hand with edema. This is particularly true in the arytenoids and in the aryepiglottic folds. This fibrosis tends to destroy tubercles and arrest the disease. Tuberculosis may involve the perichondrium of the larynx producing a perichondritis and later chondritis. These are both late manifestations of laryngeal tuberculosis and are very serious ones. They are nearly always followed by necrosis of part of the cartilage, as well as the mucosa, submucosa and musculature.

Ziegelman[3] has recently reported a tuberculoma of the laryngeal ventricle resembling prolapse of the mucous membrane. While this is an unusual tuberculous lesion it serves to show how varied the gross lesions seen in the larynx can be.

The clinical diagnosis of laryngeal tuberculosis should be made only temporarily and should not be considered complete without a very thorough and complete general physical examination and particularly a very complete examination of the chest by a chest expert. This examination should be supplemented by a Roentgen-ray examination of the chest. Films taken stereoscopically are better than flat films. We know that pulmonary tuberculosis is prone to manifest itself first in the apices and usually on the left earlier than on the right. The general physical examination of the chest and Roentgen-ray examination should be supplemented by a urinalysis, by a blood examination, including a blood Wassermann, examination of sputum, etc. One or two negative sputum examinations count for very little. An animal inoculation may be necessary to find tubercle bacilli.

Let me repeat that the importance of an early pulmonary diagnosis cannot be emphasized too much. While the death rate from pulmonary tuberculosis has been reduced in a very gratifying manner during the past twenty-five years, we cannot afford to be satisfied with our present results. Laryngeal tuberculosis is a disease which comes relatively late during the course of pulmonary tuberculosis. Prevention of laryngeal tuberculosis is often the best means of saving the patient's life. We know that many times patients have rather advanced laryngeal lesions before they complain of subjective symptoms such as dysphagia, odynphagia, hoarseness, aphonia, etc. We should not wait for subjective symptoms to examine the larynx, in patients suffering with pulmonary tuberculosis. The larynx should be routinely examined at least once each month in each and every patient with pulmonary tuberculosis.

The differential diagnosis is very important. Syphilis must be excluded. It is not uncommon to find syphilis and tuberculosis in the same larynx. Laryngeal tuberculosis is most common from 20 to 45 years of age. Syphilis is also most prevalent, in the acquired form, at the same ages. Many of the lesions so typical of laryngeal tuberculosis can be duplicated by syphilis.

In children laryngeal tuberculosis is quite rare. Even in children with pulmonary tuberculosis the infection more frequently spreads to the lymph glands.

Lupus, which is so much more common in Europe than in this country, may produce lesions which can easily be confused with tuberculosis. Lupus is more sluggish. The symptoms are not at any time likely to be more than mildly chronic. The lupus lesions, when present on the face, have aided greatly in establishing the diagnosis.

Actinomycosis may produce an infiltration in the larynx which simulates an infiltration from tuberculosis. Biopsy will often show the ray-fungus in the tissue removed and not the tubercle bacillus. The total absence of tuberculosis in the lungs is a very important differential point, in actinomycosis, as it is in syphilis. Biopsy for the differentiation of syphilis and tuberculosis is a justifiable procedure in doubtful cases.

Carcinoma of the larynx is more frequently found in patients past 50 and more frequently in men than in women. The lesion is more likely to occur in the anterior half of the larynx instead of in the posterior half where tuberculous lesions are so frequently found. Pain is often referred to the ear on the corresponding side with an early carcinomatous nodule in the larynx. Hoarseness seems to manifest itself earlier in carcinoma than in tuberculosis. The absence of

pulmonary tuberculosis as well as the age of the patient are helpful deciding points. Carcinoma is more frequent past fifty. The late John E. MacKenty,[4] with his superlative skill, was able to diagnose laryngeal carcinoma without biopsy. However, in the case of most laryngeal lesions biopsy is more than justifiable in order to be sure the lesion is or is not carcinoma. Personally I do not believe that biopsy should be relegated to the past even with all of our modern scientific methods of diagnosis both clinical and laboratory.

Chronic catarrhal laryngitis should offer very little difficulty of diagnosis while a pchyderma of the interarytenoid sulcus may and frequently does look like the infiltration of a tuberculous lesion. A chronic catarrhal laryngitis does not produce gross lesions in the larynx while it may be present in a patient with pulmonary tuberculosis. It is in itself not a tuberculous lesion and should give relatively little difficulty of differentiation.

Treatment of laryngeal tuberculosis must go hand in hand with that of the pulmonary disease. The laryngologist must work with the chest expert if anything is to be accomplished. Bed rest is extremely important not only on account of the pulmonary disease but on account of the laryngeal.

Climatic treatment is very important for those who can afford to go away from home. In recent years, I am very glad to say, many sanitaria have been provided, all over North America, for the care of tuberculous patients. Patients are being well cared for. This is one of the biggest factors in the reduction of the mortality from tuberculosis and in the prevention of the spread of the disease. In fact, so much is being done for tuberculous patients in every community that on July 1, 1932, Phipps Sanitarium in Denver, for tuberculous patients, which has been in continuous use since 1904, will probably close its doors. For the past several years the institution has been running at one-third capacity.

Absolute silence puts the larynx at rest more effectively than any other method of treatment. It is rather drastic and is resented by some patients. Sir St. Clair Thomson[2] of London attributes the cure of his own larynx to the fact that he did not even whisper for one year and that during the second year he whispered, but did not talk out loud. The fact that so celebrated an authority upon laryngeal tuberculosis was willing to submit to this treatment so promptly is the best recommendation I know of for its use. If patients are too depressed by remaining absolutely silent it is sometimes necessary to allow them to whisper. Both of these methods of treatment can be carried out much better in a sanitarium than they can in a general hospital and much better than in the patient's home.

During recent years sunlight treatment of the larynx has assumed a great deal of importance. This was first used by J. Sorgo,[5, 6] in Switzerland in 1904 and 1905. Glass absorbs the actinic, chemical or ultra-violet rays and is not suitable for reflecting the sun's rays into the larynx. The Verba Solar Laryngoscope has mirrors made of an alloy of aluminum and magnesium. More than 90 per cent. of the actinic rays are reflected into the larynx by these mirrors, so that the patient gets the benefit of the actinic rays. This method of treatment is a form of occupational therapy. It enables the patient to see his own larynx and to study the progress of the disease. Patients should begin by exposing the larynx for a half minute daily. The time may be lengthened a half minute each week until the patient can tolerate, without sun-burning the larynx, ten minutes daily. The mirrors are fastened to the back of a chair, upon which the patient sits in reverse fashion, or to the head of the patient's bed. Patients often become over-enthusiastic regarding this method of treatment and unless the treatment is supervised by a laryngologist they are likely to overdo it, especially at first, with the result that they soon sunburn the larynx and do harm instead of good.

Lactic acid, formalin and trichloracetic acid have very little use in the field of laryngeal tuberculosis. They are all extremely irritating and are difficult to apply. Small amounts of these on a very delicate cotton-wound applicator may be useful for the treatment of ulcers, but there is grave danger that they will be applied to the normal areas in the larynx and produce needless irritation which it is so desirable to avoid.

Probably no single method of treatment for laryngeal tuberculosis has ever assumed so much importance and yielded such uniformly good results as cauterization. Sir St. Clair Thomson[2]

of London advocates the use of the cautery at white heat instead of a red cautery point, because, at white heat the platinum point seals the cauterized area instead of pulling the eschar out with it when the cautery is withdrawn, thus leaving a bleeding area. The cautery may be used by the direct or indirect method. L. W. Dean[7] and H. Arrowsmith[8] have advocated suspension. Sir St. Clair Thomson[2] and Joseph B. Greene[9] prefer the indirect method. I have used both methods, but find the indirect method usually the better. As many as four to six lesions may be cauterized at a single sitting under cocain anesthesia. It is not necessary to destroy the entire tubercle. A sharp cautery plunged into a tubercle, at white heat, will produce enough fibroid change to ultimately destroy the tubercle or an ulcer depending upon which one it is used for. To be of any great value it should be used early before there are too many multiple lesions in the larynx. It should not be used when the patient has a high fever, night sweats, loss of weight and exhaustion from the pulmonary disease. It should only be used when the chest expert reports that the patient's condition will tolerate the use of the cautery. Hemorrhage and infection rarely follow the use of the cautery and very little after-care is required.

Excellent local anesthesia can best be obtained by applying a 10 per cent. aqueous solution of cocain to the larynx on a cotton-wound laryngeal applicator, or with a Bruning's laryngeal syringe, once each one or two minutes for fifteen minutes. The application should be preceded, by one-half hour, by a hypodermic injection of Morphin sulphate ¼ grain. If the patient is very apprehensive Sodium Amytal gr. iii, one hour before and the same dose one-half hour before the application of the cocain will usually allay all fear. The best anesthesia can usually be obtained by waiting fifteen minutes after applying the cocain before cauterizing. Sodium Amytal also lessens the danger of poisoning from cocain.

Amputation of the epiglottis has offered an excellent means of arresting the disease when the gross pathology is limited to the epiglottis. If it has extended into the base of the tongue and the pharynx, amputation only aggravates the disease and hastens the death of the patient. This may be done only under local anesthesia, as patients with pulmonary and laryngeal tuberculosis are very poor risks for any and all types of general anesthesia.

L. B. Lockard[10] makes the following statements regarding the seriousness of epiglottidean tuberculosis:

"By far the most fatal, as well as the most painful, localization of tuberculosis in the larynx is the epiglottidean; a type always resistant to treatment, rapid in development and extension, and deplorable in the subjective symptoms evoked. The picture presented by the unfortunate subject of such a process is well known to all, and no other condition, with the possible exception of a malignant growth, induces a feeling of such utter helplessness as to either cure or effective palliation. That it is possible, however, through radical extirpation of the involved organ, to effectually relieve the pain in practically all of these cases and to permanently cure the larynx in a small proportion, has, I believe, been conclusively demonstrated."

Lockard[11] furthermore says, in drawing conclusions from statistics:

"These statistics, limited though they be, warrant the unequivocal assertion that amputation should be performed in every case of involvement regardless of the extent of the disease, local or constitutional, when odynphagia or dysphagia exists and can be ascribed, even though only in part, to the epiglottis; that it is likewise indicated, and should be performed at the earliest possible moment, in every case where there is anything beyond a sharply circumscribed focus, whether or not odynphagia exists, provided there is even a remote possibility of arrest of the complicating lesions. If the accompanying processes are advanced to a stage where arrest is improbable, amputation should not be performed unless the lesion gives rise to otherwise uncontrollable pain.

"Some few cases, even of widespread involvement, will recover spontaneously or by reason of less radical treatment, but for every one so saved ten or twelve will succumb. Epiglottidectomy will save that one as well as an occasional case from among those who otherwise would die and, in addition, will free practically all from the most harassing feature of the disease, the well-nigh intolerable odynphagia."

Indications.—Lockard[10] gives the following excellent reasons for amputation of the epiglottis:

"1. The operation is imperatively demanded in every case of involvement accompanied by severe dysphagia, regardless of the state of the lungs.

2. Immediate removal is indicated even when dysphagia has not supervened, provided the lesion is extensive and there is still hope of arresting the pulmonic disease. The existence of such a focus is a constant menace, because it may at any moment give rise to

severe pain and in a brief period cause irreparable injury.

3. Any lesion that resists treatment should be excised.

4. If the condition of the epiglottis is such as to hinder correct treatment of underlying lesions, it may be removed to render these parts more accessible."

Contraindications.—Under certain conditions amputation should not be resorted to, as follows:

1. Patients who are approaching a fatal termination, even though not moribund, should be made as comfortable as possible with narcotics and should not have an operation. At first thought this seems to be rather an unnecessary precaution, but such is not the case. During the late stages of pulmonary and laryngeal tuberculosis patients frequently develop severe and very painful epiglottidean tuberculosis. Every effort must be put forth to give them relief, but the epiglottis should not be amputated if the patient has only a few weeks to live. If by amputation he can be made comfortable for several weeks or months, then the operation is justifiable.

2. If there is present even an incipient tuberculosis of the pharynx, fauces, or base of the tongue, epiglottidectomy seems only to hasten the fatal termination.

3. Hemoptysis, even when slight or mild, is likely to be aggravated by any surgical procedure.

Preparation and Anesthesia.—This should be carried out just as outlined for cauterization, except that more of the cocain should be applied about the epiglottis and the base of the tongue.

Technic.—The epiglottis may be removed by either the direct or indirect method. Dean[7] prefers to operate by suspension. Lake's forceps are well adapted to the indirect method. The cold wire snare and the galvanocautery snare are preferred by some laryngologists. Most of the laryngoloists who have used the cautery snare report rather a severe reaction following its use. Personally I prefer to amputate the epiglottis with forceps. Lake, Barwell, Spiess, and Moritz-Schmidt have each devised forceps for use by the indirect method. Occasionally it is necessary to remove the epiglottis in sections, but as a rule the entire epiglottis can be cut off, well down against the base of the tongue, with the first bite of the forceps.

Hemorrhage.—Occasionally moderately severe hemorrhage follows the removal of the epiglottis, but this will usually stop in a very few minutes. If it does not stop, a tonsil hemostat can be used to catch the vessel, or the galvanocautery may be applied. Delayed primary or secondary hemorrhages are rare.

Infection.—Delayed healing of the stump of the epiglottis from infection of any kind is extremely rare. The wound usually heals promptly in ten to fourteen days.

After-Care.—Formalin, lactic acid, silver nitrate, protargol, argyrol, iodin, mercurochrome, the galvanocautery, etc., are all suitable for application to the stump of the epiglottis, either immediately after the operation or during the subsequent healing, if the operator prefers. Sprays and gargles may also be used. Healing will take place just as rapidly if these drugs are omitted, except in patients suffering with postoperative infection.

Tracheotomy for advanced laryngeal tuberculosis is a humane and a justifiable procedure. This puts the larynx at rest. It should not be used in early cases.

Gastrostomy is a very humane procedure. It enables the patient to take nourishment when the larynx is so extensively involved that swallowing is impossible. Gastrostomy is not recommended except in advanced laryngeal tuberculosis with odynphagia and emaciation from failure to take proper nourishment. Rectal feeding is usually not very satisfactory. Tube feeding is also unsatisfactory. Gastrostomy seems to be the best method of making the patient's last few months of life bearable and reasonably comfortable. Dr. Chevalier Jackson is a strong advocate of gastrostomy in patients who are suffering from severe pain whether due to tuberculosis or cancer of the larynx.

The injection of alcohol for the relief of severe, constant pain in the larynx has, in the hands of many laryngologists, such as Hoffman,[12] Sturmann,[13] Grant,[14] Fetterolf,[15] and Vanderhoff[16] yielded very satisfactory relief for the patient. The injection is carried out as follows: The skin of the neck should be washed with alcohol over an area covering the larynx and adjoining cervical region. Iodin may be painted on the skin at the site selected for the injection in place of the alcohol, if the laryngologist prefers. Three c.c. of a 50 per cent.

aqueous solution of ethyl-alcohol should be drawn into a sterile syringe, as two or three c.c. should be injected on each side. The patient should be placed on a bed or table with the head extended, so as to put the cervical muscles on the stretch. The superior laryngeal nerve can usually be located at about 3 cm. from the thyroid notch, on each side, as it passes over the upper border of the thyroid cartilage to enter the larynx. Pressure at this point, with the finger nail, usually elicits pain. The patient should be told that he will suffer a little pain, but that it will not be severe and will not last long.

The needle should be slowly plunged through the skin at a right angle to the surface for a depth of 1½ cm. and the needle point moved around until the patient complains of sharp pain in the ear, jaw, neck, or arm on that side, though an occasional patient will not complain of any pain. The solution should be injected slowly while the needle point is being moved about. After withdrawing the needle the puncture should be sealed with flexible collodion. The injection may be repeated on the other side at once or at a subsequent time, according to the patient's condition and the physician's surgical judgment.

Fetterolf[15] concludes that "study of the reported cases would indicate that this method has a distinct place in the treatment of inoperable cases of advanced tuberculous involvement of the larynx, and that in it we have a procedure which requires no special apparatus or training, which is not hazardous or dangerous, which is not seriously painful, which can be repeated as often as may be required, which is usually successful at either the first or second attempt, and which can produce few untoward effects, and those but temporary."

Palliative measures may be required at any time, but are particularly useful in cases which offer a hopeless prognosis. One per cent. menthol in glymol or albolene dropped into the larynx from a laryngeal syringe helps to allay pain.

Chaulmoogra oil has been advocated and used rather extensively in recent years. Dr. R. M. Lukens[17] and my former associate, Dr. C. L. LaRue,[18] have both used chaulmoogra oil with considerable benefit to patients.

Two or three per cent. aqueous solutions of cocain may be necessary for spraying the larynx, especially just before meals, in order that the patient may be able to swallow. Hypodermics of morphin are also necessary in advanced cases. Euphagin tablets offer a means of relieving pain. Euphagin is amidobenzoicethylesther. I have used these following tonsillectomy.

Artificial pneumothorax plays a very important part in the treatment of laryngeal tuberculosis just as it does for pulmonary. Putting one lung, and the worse lung, at rest lessens the sputum, cough and consequent irritation of the larynx. The patients are often definitely better in many respects. Dworetzky[19] believes this method of treating the pulmonary disease often prevents the laryngeal complication.

In conclusion let me emphasize the importance of rest in bed for the pulmonary tuberculosis and rest of the voice by silence, or at least by whispering. Sunlight for the larynx as well as the skin of the entire body is a great help. The cautery should be reserved for the more extensive lesions, and especially those which have resisted other methods of treatment.

Physicians' Building.

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DISCUSSION

Dr. O. B. Nugent, Chicago: I am very much interested in this presentation, and while Dr. Spencer did not speak of treatment, I would like to ask a few questions concerning treatment of these conditions. Dr. Wesley, I believe, in 1923 invented a light by which he was able to treat tuberculosis of the larynx; it was a carbon arc light. About the same time Dr. Moore presented some forty-nine cases that had been cured. Dr. Muller in Vienna has recently reported treating a large series of cases, in which he got a great deal of benefit with the carbon arc light. Perhaps the ultraviolet was the ray that did the work. I would like to ask Dr. Spencer to give us a little information on that.

Dr. Frank R. Spencer, Boulder, Colorado (closing): The Finsen Light has been used extensively for the treatment of laryngeal tuberculosis, but it is not as satisfactory as ultraviolet light alone. Direct sun light is the most useful form of ultraviolet light available. This can best be applied by means of the Verba Laryngoscope. This has mirrors made of an alloy of aluminum and magnesium, so that a very small percentage of the ultraviolet, actinic or chemical rays are absorbed. Glass mirrors absorb so much of the ultraviolet rays that only a few rays reach the larynx. On cloudy days some type of sun lamp may be used with the laryngeal attachment.

In using a Verba Laryngoscope the patient should sit on a chair in reverse fashion with the laryngoscope attached to the back of the chair. It may also be attached to the head of the patient's bed if the patient is unable to get out of bed. With the Verba Laryngoscope patients are able to see their own larynges and note the progress. This gives them renewed interest in the treatment and serves as one form of occupational therapy.

Dr. J. Sargo of Switzerland was the first to utilize the sun's rays for the treatment of laryngeal tuberculosis. His first article appeared in 1905. Since then the method has been perfected and used in many different ways in most of the countries of the civilized world.

Ultraviolet rays have been more satisfactory than any type of high frequency current, although different types of high frequency current, such as the coagulating current, may be used. Cauterization has probably been the most useful single method of treating advanced tuberculosis lesions of the larynx we have.

Doctor Novak has mentioned the fact that suspension laryngoscopy is quite an ordeal for the patient and it is. The reaction following suspension laryngoscopy hardly justifies the routine use of suspension, except in a few selected cases. Sir St. Clair Thomson of London and Dr. Joseph B. Greene, of Ashville, N. C., favor the indirect method. While I have used both methods I believe the indirect is the better one.

ELECTRIC SHOCK*

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Mr. Chairman, Ladies and Gentlemen:

I feel honored and indeed grateful for this opportunity afforded me to bring before the Surgical section of the Illinois Medical Society a subject which to my mind merits the attention of the entire medical profession, namely, electric shock from industrial currents.

For the past twenty years I have had the good fortune to be affiliated with the electrical industry in Chicago, both power and transportation. In that short time I have witnessed many new uses of electrical energy and with the growth of the industry I have had the opportunity by experience on actual electric accidents to study the problem from a practical rather than a theoretical viewpoint.

We are living in what is known as the "electrical age" by reason of the fact that electricity is the most recent of Nature's energy that has been tamed, as it were, by mankind to do his work.

This so-called subjection of electrical energy to man's bidding has not been accomplished without a large toll taken in lives of men, and has been the direct cause of bringing suffering and disabling injury to countless numbers of people who have been so unfortunate as to come in contact with its current. This electricity is a force which is silent, invisible, powerful and safe

*Read at annual meeting of Illinois State Medical Society, Surgical Section, at Springfield, May 17, 1932.

to handle if its hazards are respected. It is impossible to so harness it that it can be made harmless under all conditions at all times. Its real nature is still much of a mystery and is little understood by those outside the industry.

Electricity and its uses are but in its infancy today and there is no man daring enough to prophesy what the future holds for this energy. The passing of the near future will witness tremendous strides and expansion of this industry. Long transmission lines carrying voltages in the thousands and tens of thousands, criss cross our continent, carrying electric energy into heretofore inaccessible places for the work and convenience of new consumers. This increased use of electric current will carry with it an increasing toll of injury and death to those who are ignorant of its danger or who will take a chance.

Those who have been engaged in the electrical industry and public utility companies for the past decade have fully realized its danger and have surrounded the workers in and about the current with all possible safeguards. Despite their efforts toward safety by instruction, practice and rules, electrical workers meet disaster far more frequently than can be explained. Safety lies in the proper installation and subsequent maintenance of all electrical equipment. Disregard of the safety rules devised for its use will certainly cause trouble for those who disregard its hazards.

The medical profession is frequently called upon to treat injuries resulting from electrical contact and the better to understand the basic principles of electricity, the better to treat the resulting injuries, they should be thoroughly acquainted with some of these factors. For this paper two kinds of electricity are described; direct or continuous current which flows in one direction, and alternating current or interrupted current, in which the flow of current flows first in one direction and reverses itself and then flows in another direction. The number of reversals or alternate changes in a second of time is known as the frequency of the current. Electricity that is retained within a charged body is called static while that which moves along a conductor is known as dynamic or electricity in motion. The most important factor in electricity as pertains to its effect upon man is the voltage or strength of current. There is no set minimum or maximum of voltage that will determine the danger to life. While a certain voltage will be fatal to one person under like circumstances to another it may be harmless. The rate of flow or amperage is of importance but there is no definite proof as to how much or how little an amount the human body can tolerate. It has been generally assumed under normal conditions that 0.1 ampere can be tolerated without harm to the human body. The resistance is the property of all substance which has a tendency to obstruct or retard the flow of an electrical current through that substance. It varies with different substances and under different conditions. The greater the resistance of a substance the less current passes and the less harm it can produce in shock. The skin of the hands offer great resistance to the passage of electric current providing they are dry and less resistance if they are wet. The exposed skin surfaces offer greater resistance than the covered surfaces of the body and this is due to perspiration under the clothing. An acid or alkaline perspiration has a tendency to lower skin resistance, while an oily skin has a greater resistance. It has been said that a woman's skin is less resistant to the passage of the electric current than that of man and may be due to a finer texture and less exposure than man's skin. The greater the resistance of the skin the less amperage results but the greater amount of heat is developed with a greater destruction of tissue. The voltage of a given generator remains almost constant while the amperage and resistance vary many times during the day. The further the electricity is sent from the power house the more the voltage is reduced and for that reason it is necessary that at definite locations additional electrical generating equipment is essential to boost the line current or a greater current is generated at the power house and is then reduced to the voltage required by the industry for operation of its electrical machinery.

There has been a mistaken idea in the mind of the average person that low tension or low voltage currents are harmless and can be treated with impunity. Some authorities have gone on record that conditions being equal, any current, direct or alternating, up to 300 volts is harmless as far as being fatal is concerned, and that currents from 300 to 6,000 are the ones to fear.

Strange as it may seem, low voltage current of a low frequency has produced death. There are on record cases of fatal shock as low as 65 volts, and again there are cases where the victim received 50,000 and higher, but was not killed. Again we must treat all electrical current, regardless of its strength, with respect, as conditions determine the ultimate outcome of every electrical shock. The large number of deaths attributed to low voltage currents is due to the fact that more people have access to the low tension current than to high voltage currents. Fewer accidents occur on the higher voltage in proportion to those working in and about it because fewer men work it and those compelled to be near it have a wholesome respect for its power to do harm and have been trained in the proper safeguarding of their persons. Treat all electric current as dangerous and especially so if the electrical equipment has not been maintained in a proper manner.

A second erroneous theory is that shock from a current of 550 volts or higher means almost certain death and that resuscitative measures are fruitless. Countless lives have been sacrified to this erroneous belief that might have been otherwise saved had the victim been given the benefit of the doubt and attempts made to resuscitate them.

The fact is that many of the cases of electrification by higher voltages show the greater percentage of resuscitations and that they have been more easily resuscitated than those of lower tension currents.

The amount of voltage does not always govern the severity of the shock. This idea has resulted in the doctor being called to the scene of the accident and being advised of the strength of the voltage received, has at once announced the futility of resuscitative effort and after superficial examination has pronounced the victim dead and left the scene, only to experience the humiliation of later being recalled and learning that the victim's fellow employes had attempted resuscitation as they had been instructed and the patient revived. Gentlemen, this is distressingly frequent; too frequent for us to ignore in these days of competition and adverse comment. It is an absolute fact that many of these so-called fatal shock cases were fatal only in neglect of resuscitative efforts. We must look upon all of these apparently dead cases as suspended animation and treat them as living by supportive measures such as artificial respiration until we are positive that life has departed permanently.

Another fallacy is the prevailing idea of the futility of working on the shocked and apparently dead individual for any great length of time. These cases are in a physiologic state of death and while it is a fact that many have been killed instantaneously by the action of the current on the heart producing ventricular fibrillation still a large proportion of them have had a paralysis of respiration due to the action of the current on the respiratory center in the brain and if supportive measure, as artificial respiration, be given at once and persisted in for a long period of time, many of them will be saved. Permit me here to quote a few statistics, which, dry as statistics are, will be enlightening as well as encouraging:

Current	Voltage	Time to Resuscitate
AC.	110	2 hours.
AC.	200	16 minutes.
AC.	220	1 hour and 20 minutes.
AC.	240	1 hour.
AC.	400	2 hours, 5 minutes.
AC.	1,000	17 minutes.
AC.	2,300	3 hours.
AC.	4,000	1 hour.
AC.	20,000	24 minutes
AC.	11,400 to 33,000	5 cases each took I hour to resuscitate.

These figures of one group will readily show that voltage and length of resuscitation are not stable; 69 per cent. of this group the victim fell or was thrown from the current source, period of contact brief and full force of current probably not exerted; 23 per cent. were pulled away from the current conductor so must have received a comparatively full volume of the current while they were in contact. A definite amount of time must have elapsed during the instant of contact and rescue by fellow workmen. In 8 per cent. the current had to be shut off before the victim could be removed. From this we can all learn a lesson. Look upon all electrical apparatus with awe and respect. Look upon all electrified or shocked persons as alive, in a state of suspended animation or physiological death. Persist in resuscitative therapy instituted at once after rescue and watch the death rate come down in proportion to the amount of resuscitative effort and knowledge dispensed.

Records from another group show that the

greatest number of electric shock cases occurred between the hours of 9 a. m. and 11 a. m. and between 2 p. m. and 3 p. m. Is the former due to the increased activity of the worker and on account of his feeling refreshed from his night's rest makes him act in an impulsive manner and in his haste fails to take the necessary precautions? In the latter is this frequency of electric shock due to the let down of the worker after his noonday meal plus the fatigue of his work responsible for this frequency period?

The time of year for the greatest number of electric shock accidents in one group are the months of June and August. Is this due to heat and atmospheric conditions surrounding the victims? Are workers in these months more susceptible to electric shock due to their clothing and bodies being wet with perspiration, thereby reducing the skin resistance and producing a more favorable ground? These summer months are the greatest construction periods and there is a greater force of men engaged in electrical work during this period.

Which Current Is Considered the Most Dangerous to Life? This is a much disputed question, but taking everything into consideration and conditions being equal, it is the alternating current with its frequency of reversal of current flow. As a rule, low tension alternating current up to 300 alternation is more dangerous than with the frequency over 4,000 per second. Proof of this is in the use high frequency current is put to in medical practice. High frequency currents passed through the body for long periods of time may become very harmful. The greatest danger lies in the fact that a low tension current with a low frequency acts upon the heart, producing a fibrillation from which no recovery is possible.

It has been demonstrated that, all things equal, an alternating current of 400 frequency is as dangerous as direct current of the same tension and frequency. Currents alternating on a frequency from 25 to 300 per second are three to four times as dangerous as direct current of the same potential. From the medical man's viewpoint, there should be no need of determining the most hazardous current but to treat it as equally hazardous and give the victim the benefit of the doubt that they are still potentially alive and can be resuscitated.

What Determines the Severity of Electric Shock? Many factors must be taken into consideration as to what determines the severity of electric shock to a person.

The strength of the voltage and the amperage of the current.

The nature of the current whether direct or alternating.

The character of the ground connection, whether wet or dry.

Whether the day is clear or rainy. The latter would, of course, be more favorable to severe shock.

The season of the year. Summer with its heat and humidity and the worker's more free perspiration and wet clothing. Winter with its snow and ice underfoot.

The length of time the victim is in contact with the current.

The portion of the body and extent of surface presented to the contact. The brain and heart areas being the most susceptible to the force of the current.

The pathway that the current takes through the body and its passage in close proximity to the heart.

The state of health has some bearing as to shock severity, but it is still debatable, as we personally have had cardiac, renal and lung disease present in individuals who were shocked severely and who did not appear to be harmed by the passage of the current.

The mental state plays a prominent part in electric shock, as the fear element produces a debilitated state. Records show that when a thing is expected to happen and a person steadies and prepares himself to meet the crisis, he is able to withstand the shock better than if it came unexpectedly and unannounced and the fear element pictures instantly that the dread thing is happening.

It has been stated by some writers that a new man about electric machinery was more susceptible to the current than the old veteran. To my mind and from experience this cannot be true and there are many factors to take into consideration that would lay such an assertion open to debate.

Personally I believe one of the greatest factors in the severity of electric shock rests in the manner in which the victim was rescued from the

electric contact whether he was released with one movement or whether he was permitted to recontact the conductor and receive subsequent shocking. This I know will account for some of the deaths resulting from a moderate tension current where the first shock would not be fatal, but the second severe shock produced the damage to life.

The secondary injuries received by the victim of electric shock play an important part in the severity of the shock and determine the outcome.

What Are the Experiences or Sensations Felt by the Electrified Person? I can answer this with some degree of authority both from my own personal experience with electric current and from the information given to me by those who have experienced severe electrification. I was grounded with a voltage of 550 direct current in the steel structure of an auditorium with my limbs around a steel girder and holding with the left hand and arm to a steel center column while with the right hand I reached out to cut a line that was supposed to be dead with a pair of steel pliers which were not of the safety insulated type so commonly in use today. My second electrification was on an alternating current of 1,000 volts while in direct contact with a copper trolley feeder.

Many, on the instant of contact with the current, lose consciousness at once, while others remember everything up to the point where they were pulled free and all was blank until they were coming out under artificial respiration, when they could hear what the rescuers were talking about and could feel pressure being made upon their backs.

The one and greatest sensation is that of fear in all its dreaded form. Fear of dying, fear of being burned, fear of falling and being crippled. It seems as if your entire life passes before you in panorama form. This lasts only a fraction of a second, but a lifetime passes in review. There is a sensation of powerful blows being struck all over the body, especially at the back of the neck, and powerful muscular contractions seem to bend one into all sorts of contortions, when in fact, there is only a contraction, slight in some cases, that is visible to the spectator. The feeling is that one cannot breathe. Continuous contact with the current causes an anesthetic feeling akin to going under a surgical anesthesia. Sensation is numbed and you fall into oblivion. On talking with others who have been shocked I have been told by some that they never remembered anything after they hit the current, while others related similar experiences as my own. I can only say, gentlemen, that the sensation is very well expressed in the phrase: "It won't be long now," and you will have to take my assertions as a fact that I do not believe any of those who will discuss this paper will submit themselves to the electric current to disprove my statements.

What Are the Conditions Produced Upon the Human Body? The conditions produced upon the human body by the electrical current depend upon the source, character, voltage, amperage and resistance involved. There are painful shocks to the central nervous system.

Paralysis of brain centers affecting the functions of the heart and lungs.

Unconsciousness of a lesser or marked degree.

Paralysis of voluntary skeletal muscles.

Paralysis of involuntary muscles of the heart and lung preceded by painful muscular contractions.

Hemolysis or blood disintegration. Excessive fluidity of the blood.

Creation of excessive heat both on surface and within the body and brain. The highest temperature we were able to record was 140 degrees within the body while surface temperature at point of contact has been much higher. In some cases the temperature within the skull has been at the steaming point. This in itself is sufficient to cause death.

The amount of destruction of tissue depends upon the current, contact and resistance of the tissue. The greater the resistance the greater the heat generated, and therefore, the greater the destruction or burn of the tissue.

Inability of action, mental and nervous instability and if the contact is prolonged long enough there may be a cremation and death.

The eye findings soon after rescue have shown a widely dilated pupil, both equal and reaction lost to light. Intraocular examination shows in some a foggy appearance of the lens, an anemia of the retina with the arteries only showing a hair line thickness and appearance of beading. In some cases it has been reported that there was

a star fracture of the lens but we cannot vouch for its value.

What Causes Death From Electric Currents? The theoretical causes of death from electrical shock may be given as: general instantaneous cell death (Fritz Schuyzer) — lightning. Living matter, as we know it, is in the living cell which is a microscopical globule having a cell nucleus and a sharply defined cell surface. These small globules are placed in a cell fluid containing sodium, potassium, magnesium and lime salts forming combinations with chloric, phosphoric, sulphuric and carbonic acids. This composes the electrolytic fluid and holds a static charge of contact electricity so that the molecules repel each other and thereby gain stability. The surface of the cell nucleus and cell periphery hold this static charge. So long as this cell activity exists, its chemical activities persist and this is the energy source of life. Might not this be the so-called soul of the body? So long as the surface tension remains intact, life goes on, but permit an outside current (Electrical) to enter living tissue, an ionic change occurs of an electrolytical character, the colloidal matter changes from a solution to a jell and if the outside electrical current stops, and this fluid goes back into solution then life will return. If the outside current persists then the cell fluid remains jell and life becomes extinct. It requires a large direct current to destroy cell electrolysis. Alternating current excites the movement of the ions in such a manner as to excite violent vibration within the cell and surface tension is broken.

A second theory is brain death caused by an intensive molecular concussion of nerve cells of the central nervous system analogous to cell death as described. The nerves, composed of fine, minute, nerve fibers capable of transmitting electrical stimulation, and in man, the central nervous system, is a pathway of conduction for electrical currents. When the current enters the body, it is conducted to the various voluntary and involuntary muscles. The muscles made up of minute fibers are sensitive to outside electrical stimulation and the excitation causes contraction. If this is rapid and prolonged the muscle is soon fatigued. Involuntary muscle fibers contract slowly, while voluntary muscle fibers contract quickly. The heart muscle, being striated and suitable for fast work and the fibers being short, ramify and are surrounded by a network of minute blood vessels. The heart being an automaton works without rest through life. If the heart stands still, heart nutrition is interfered with, oxygen being unobtainable, the heart slows up, rests and will not resume its work. This is known as heart death, through stoppage of circulation from over excitation of the muscle fibers of the heart from the electrical current. (Heart fibrillation.) In heart death any interruption of the normal, rhythmical heart action will produce circulatory disturbance and it stops. The heart may give evidence of resuming its work. The blood pressure rises at first and then drops slowly. If the outside electric current stops the heart may try to resume its function, but if the current persists the blood pressure drops to zero and death comes on. When circulation is interfered with, anemia of the brain, which is due to oxygen starvation and energy producing glycogen, a fluttering or fibrillation comes on and death soon follows. Heart muscles are especially sensitive to low voltage currents and to the frequency of alternating current. It is easy for these currents to reach the heart by way of the blood stream. The current of higher voltage apparently follows other conducting pathways and the heart does not become excited, but the respiratory function is paralyzed.

Electric current produces death directly and indirectly, the first by a sudden shock causing a temporary arrest of the heart and respiration without producing a permanent lesion, but this is rare.

The cause most readily accepted is that of primary heart failure from fibrillation of the ventricles and paralysis of respiration through the central nervous system. Respiratory paralysis is first induced by an inhibition of respiration due to the action of the electrical current on the respiratory center in the brain. Then follows anemia of the brain producing syncope and later death.

Indirect causes of death may be a trivial shock, harmless in itself, that would cause the victim to fall and the resulting injuries sustained be the cause of death.

Death may ensue subsequent to the electrical shock and be a matter of a few days or weeks such as exhaustion from debilitating injuries received at time of accident or gangrene, sup-

puration or inflammation resulting from injuries received foreign to the electric shock.

Electric burns, on account of their severity, may cause death subsequent to the initial electric shock.

Other pre-existing pathological conditions antedating the shock may be aggravated to such an extent that death follows. The terrific heat generated within the tissues of the body and especially in the brain is sufficient to cause death.

Then the method of rescue from the electric conductor, whether the victim was permitted to recontact the conductor with a subsequent re-shocking, which resulted in death, which would not be otherwise were he to receive the one shock only.

Sometimes the stomach contents are forced up into the throat by the violent contraction of the muscular coats of the stomach and the patient strangles on his own contents.

Remote Effects of Electric Shock. This is a subject over which there has been a great deal of controversy and from medical literature there is nothing on record to support the grotesque claims that are often made in a court of law by a patient who has previously received an electric shock who attributes all subsequent pathological conditions as dating from an electric accident some months previous. Electricity is surrounded with mystery to the average person and the fact that they have been shocked, be it trivial or severe, and according to whom the shocking agent belonged, determines many times the resulting claims for damages for alleged conditions arising out of the previous shocking incident. In court it is amazing the testimony that will be given by the average medical man as to the factors on which he bases his claims that his patient's present condition was due to some remote electrical injury.

In my short experience of only 20 years in electric injuries we have yet to see any definite lesion resulting from minor or severe electric shock except those resulting from the electrical burns where a part was definitely destroyed. Alleged cases of organic nervous lesions, epileptiform attacks, mental confusion, delusions of persecution, multiple sclerosis, brain lesions of progressive paralysis, paralysis of single or groups of muscles, sensory changes, peripheral nerve lesions (except where actually destroyed at time of injury by the resulting burns), arthritis of joints, anklyosing of joints and atrophy of muscles I have often heard of and read about but there was never any positive fact that these resulted from any electric shock and many cases recover remarkably after they have received their share of the damages awarded.

We often find immediately after the shock some mental and nervous symptoms and partial inability to coordinate normally the muscles but where this has occurred their stay has been temporary and eventually disappeared. Personally in 20 years experience I have not seen a permanent disability except those due to tissue destruction from the electric burns. Very often legal debate arises as to whether death was caused by electric current or from other causes. To determine this a thorough search should be made and carefully over the entire body for evidence of what is known as the contact spot. It is the spot where the current enters and leaves the body and may be found in odd locations. If found it is almost direct evidence than an electric current had been present.

The presence of electric burns of one or more degrees may be present; these may be trivial or extensive or may be absent altogether.

The teeth early lose their lustre.

The surface temperature may be high especially at point of contact and the temperature within the body and especially in the brain may be very high.

Rigidity of the body first sets in in those muscles nearest the contact spot.

Hemolysis of the blood may be found by microscopical test and there may be a foggy appearance of the eye and some authorities say a star fracture of the lens.

The post mortem room shows little pathology following electric shock except in cases where the contact has been prolonged and the current high. Some pathologists have reported lung and brain odema, contracted aorta, empty ventricles of the heart, abnormal softness and pliability of the finger and toe nails.

The marked fluidity of the blood is indicative of electric shock but is also found in drowning and asphyxiation cases.

Many people have died of natural causes or by falls, etc., where there was no actual contact with an electric current but still the liability

was placed upon the public utility company as being responsible. Until we find in the autopsy room more authentic findings as to the cause of death we should be very careful as to our claims that the death in question was due to electric current.

Treatment of Electric Shock and Its Complications.—We divide the treatment into three classes, prevention, rescue and first aid as it is essential to surround all electrical hazards with safety devices and rules governing safe practices so as to prevent electrical accidents resulting. You are not concerned with the actual physical safeguarding of electric apparatus further than to be certain that all appliances used by yourself are in proper repair and that you will not undertake to repair electric lines but secure the service of those qualified to make the necessary installations and repairs. The essentials of rescue from electrical currents are as follows:

First. Release from the current in the quickest time and safest way possible. Each second that the body is in contact with the current lessens the chances of resuscitation. If the quickest way to release from the current is pulling the switch, then do so at once. Many times these accidents occur at places remote from the switch and one must use his own ingenuity in making his rescue, as each case in itself is a distinct problem.

The rescuer must exert due care and caution that in his efforts at rescue he does not do something that will cause himself to be electrified.

All rescues should be made with one hand, preferably the right, as you are not apt to receive a shock severe enough to be fatal. Our employees are instructed to put the left hand in their pocket and use the right hand only. If they receive the current it will go into the right hand and out of the right lower extremity and will not traverse the chest and heart area which would be done if the two hands were used in the rescue. The danger of the current lies in its direction within the body and transversely across the chest is dangerous.

Avoid all the skin surfaces of the victim's body.

Keep away from the pockets and shoes of the victim, as a severe shock can be obtained from metal, if present, such as knife, tools or keys.

Make use of a piece of rope, a belt, necktie or even your dry coat. Loop it about the part most easy to separate from the current and remove with one quick pull. Do not rock the patient as you will only cause him to be reshocked with probably fatal results or cause multiple terrific burns from the flashing arc between patient and conductor at time of break of contact.

If a dry stick of wood is at hand, use it to pry the patient away from the contact. Stand on dry boards if possible.

The text books will tell you to use rubber gloves, stand on insulated materials and use mackintosh cloth in your rescues. After 20 years I have yet to learn of one rescue made with these things at hand except where line men had on protective gloves at the time of accident.

When your man is free of the electrical current begin your method of artificial respiration at once and persist in same until the patient breathes or rigor mortis develops and the body turns cold and signs of death are positive. I cannot emphasize too strongly the necessity for early instituting and persisting in artificial respiration. When things look despairing, you will often be rewarded with signs of returning animation.

These cases occur in remote and isolated places where it is difficult to secure the services of a physician, and if he is available, a certain amount of precious time must of necessity elapse before he arrives. As each second is valuable, it is evident that someone who is at the scene of accident must institute this resuscitative effort at once and keep it up until the doctor arrives. This necessitates the training of the layman in this life saving measure.

Please understand me clearly that in advocating the instructing of laymen in resuscitation that it is not our intention to make Doctors out of the workers or usurp the perogatives of the medical man in the least respect. They merely function from the time of the accident until medical authority arrives and after that they are governed by the Doctor's orders. I might say that in many instances employees of our various companies have performed resuscitation and when the Doctor arrived they would tell the employee to continue his efforts,

and they would conduct their examination and give what additional treatment they thought necessary.

Then we have the other side of the question where the Doctor arrived and ordered the employee to stop his resuscitation while he made his examination and gave his treatment. Sometimes he has told the employee that he was doing the wrong method and that he never had heard of the Shaeffer Prone Pressure method and would proceed to show the employee his ideas of artificial respiration. After doing a few perfunctory movements of the arms, etc., they would desist and tell the employees the patient was dead and further work useless. After pronouncement of death the Doctor would depart, the employees, resuming their resuscitation, have revived the patient and called the Doctor back to attend the other injuries of the patient much to the Doctor's chagrin. Please do not discourage the layman in his resuscitative efforts as he is sincere in his work and after twenty years of teaching public utility employees this work I have never received but the finest reports and commendation from the medical men as to the value of their training.

Treatment of Electric Shock.—I do not wish to tell you which form of artificial respiration you as physicians should use in the treatment of electric shock but may I give you the description of the Shaeffer Prone Pressure Method with which I have been closely associated the past twenty years and which method is responsible for the saving of those employee lives in the companies with which I have been associated.

Shaeffer Method.—Lay the patient on his belly, one arm extended directly overhead, the other arm bent at the elbow and with the face turned outward and resting on hand or forearm so that the nose and mouth are free for breathing. Kneel, straddling the patient's thighs with your knees placed just below the patient's hip bones or opposite the trouser pockets. The palms of the hands should be placed on the small of the back with the fingers resting on the ribs, the little fingers just touching the lowest ribs, with the thumbs and fingers in the natural position encircling the contour of the ribs. With arms held straight, swing forward slowly so that the weight of your body is gradually brought to bear upon the patient. Do not bend your elbows. Now immediately swing backwards so as to remove the pressure from the patient and rest yourself on your heels. After two seconds' rest swing forward again thus alternately exerting pressure and removing it at frequent intervals. This can be kept up indefinitely and these respiratory movements should be done at a ratio from 20 to 40 per minute which is contrary to the teaching of theoretical text-books and doctors. I have seen many cases of resuscitation and those successful were the ones on which the rate was as given above—16 to 18 per minute are not sufficient to replace the air in the lung. The physiologists may say I am wrong but practical experience has taught me otherwise.

When artificial respiration is well under way, you can direct an assistant to loosen any clothing about the neck, chest and waist. Also with the finger remove any foreign material from patient's mouth such as tobacco, gum, or false teeth. Pull the tongue forward so it will not obstruct the air passages. It is suggested that the assistant exert gentle pressure on the tongue pulling it forward and releasing it at regular intervals (La Bordes Method). Maintain body warmth by the use of blankets and hot bags if available. We as a routine advise the use of friction of the skin surfaces of the upper and lower extremities rubbing the parts toward the heart. Over the heart area gentle counter shock is rhythmically performed, Aromatic spirits of ammonia are held near the patient's nose so that the air as inspired into the lungs from the artificial respiration will carry the stimulation to the respiratory centers. Nothing is allowed to be given by the mouth as cases of strangulation have resulted from pouring liquids into the trachea instead of the esophagus.

The use of adrenalin and other heart stimulants have not met with success in actual field cases but they should be given a trial as to their value. The use of strychnine, nitroglycerine, caffein, sodium benzoate have been recommended and can be given at the discretion of the physician. Bleeding I am confident is contraindicated in this class of cases as the blood pressure is already below normal and removing more blood only tends to reduce the already low tension. Spinal puncture to my mind has no definite value and in the field it cannot be performed without censure and danger. Cardiac massage

is an hospital procedure. Also the use of the faradic current is to be used only where the case is in the hospital.

Rectal dilatation should be tried for its reflex on the respiration.

Mechanical devices that have the principle of forcing air into the lungs and sucking it out is not without hazard and is unscientific in its theory. The use of the respirator or barispirometer can only be used in the hospital and may be of service after the patient has been given the manual method enroute from the scene of accident to the hospital. This respirator works on the basis of creating within an enclosed air tight cabinet an alternate negative and positive pressure on the victim's body which is within the respirator with the head outside the cabinet. By means of an air pump, electrically driven, a sufficient amount of air is withdrawn from the cabinet which in turn causes the chest to collapse forcing the air from the lungs of the patient. Then the air within the cabinet is brought back to normal pressure and atmospheric air enters the lungs of the patient and we have the inhalation or inspiration phase of respiration. This machine, on account of its cumbersome construction, is not practical for use in electric shock in the field. There are no definite findings as to the machine's real value in electric shock cases. There are many different forms of respirators and mechanical devices for performing artificial respiration and each has its advantages and disadvantages, the latter in such predominance as to make it of questionable character in suspended animation from electric shock. We can only guess what the future holds as regards mechanical methods and until then we must rely on the manual methods as performed by the layman at the actual scene of the accident.

We have during the past two years conducted a careful search of the literature pertaining to electric shock and it is amazing that there is such a scarcity of information of this hazard that is so prevalent. It deserves the attention of the Medical Profession and I sincerely hope that through the efforts of this Society with the new administration that the next meeting will bring out this subject in the form of a symposium on electrical accidents.

We have not spoken about electric burns nor the electric flashes to the eyes that are frequently complications of electrification. The time allotted this paper is too short to include a description of them. We have many electric shocks which result in both burns and flashes which do not cause the patient to lose consciousness. The current from which these shocks are received range from 110 volts to 150,000 volts alternating current and 500 to 660 volts direct current. All those who come in contact with electric energy are not shocked severely enough to lose consciousness but the cases where unconsciousness and death do occur are of such frequency as to cause us to exert effort unlimited to prevent such occurrence.

The charts which follow show the electrification cases that have come under our observation during the past twenty years and an effort has been made to use only those cases that have been fully described and for which records have been kept. The first chart will show the Group H series.

ELECTRIFICATION CASES
(ELECTRIC SHOCK)

Group H Series

Group Number	I	II	III	IV	V	VI	VII	Total
No. of cases.....	51	33	7	47	14	31	22	205
Persons recovered...	37	23	5	14	11	15	7	112
Fatal cases.....	14	10	2	33	3	16	15	93

Note: 112 persons recovered and survived the electrification. 93 persons died from the direct and indirect effects of the electrification. An analysis of the 93 fatal cases show the following:

FATAL CASES

Group Number	I	II	III	IV	V	VI	VII	Total
Persons died 6 hrs. to 3 months after electric shock.....	1	1	0	1	0	3	6	12
Persons dead on arrival after accident	3	0	0	2	1	1	0	7
Persons died after resuscitation done from 15 minutes to 8½ hours.....	10	9	1	28	2	12	9	71
Died but no resuscitation done.....	0	0	1	2	0	0	0	3
Total fatal cases..	14	10	2	33	3	16	15	93

Note: 12 persons were restored to consciousness and later died from 6 hours to 3 months after the accident. Deaths due to complications and indirectly due to the electric shock.

INDIRECT CAUSES OF DEATH FROM ELECTRIFICATION

Skull Fracture	2	Septicemia	2
Tetanus	1	Toxic Shock (burn)	4
Spine Fracture	1	Lung Complication	4
Total Deaths			14

Note: 10 persons were considered dead on arrival because of the severity of the destruction of the body tissues (charring, etc.). Length of time patient was in contact with the current (hours) and general state of body when discovered (rigor mortis) showed beyond a doubt that the person was dead. Resuscitation was performed nevertheless on most of these cases until pronounced officially dead by a physician.

Seventy one of these cases were pronounced dead after resuscitation was performed for periods of time from 15 minutes to 8 hours. It was in this group of cases that we had to contend with deaths from ventricular fibrillation of the heart. The length of the resuscitative effort shows the training of our first aid men to institute without delay artificial respiration and persist in its application until there is no doubt as to the death of the subject.

Of the 112 recovering from the electric shock and which were followed up over a period from one to twenty years through the periodical medical survey in our companies we were unable to find a single case of brain or spinal cord lesion developing as a remote result of electrification, notwithstanding the fact that these conditions are very frequently put forth as evidence in the medical testimony of the average physician in litigation suits for damages.

The only permanent defects ever found were those where tissue or an anatomical part had been destroyed by reason of the heat generated in the form of burns due to the resistance of the skin surface.

RESUSCITATION RECORD

Group Number	I	II	III	IV	V	VI	VII	Total
No. of cases.....	51	33	7	47	14	31	22	205
Successful resuscitations	30	15	4	12	7	8	3	79
Unsuccessful resuscitations	15	10	2	33	3	16	14	93
Recovered without resuscitation	6	8	1	2	4	7	5	33

Note: There were 79 cases on which resuscitation was performed with successful results. 33 recovered from their unconsciousness without the need of artificial respiration making a total of 112 who recovered from their electrification.

The following chart will show the nature and strength of electric current causing the electrification of this Group H series, both the successful and unsuccessful cases.

ELECTRIC CURRENT AND VOLTAGE

Successful Cases (Living)

Alternating Current	Group Voltage	I	II	III	IV	V	VI	VII	Total
AC.	220	0	1	0	0	0	1	0	2
AC.	440	0	2	0	0	0	1	0	3
AC.	1,500	0	1	4	0	0	0	0	5
AC.	2,200	0	0	0	0	0	0	2	2
AC.	2,300	1	2	0	4	0	8	1	16
AC.	4,000	0	1	0	0	0	1	1	3
AC.	5,200	0	0	0	0	0	0	1	1
AC.	6,600	0	10	1	1	0	0	0	12
AC.	6,900	0	0	0	6	0	0	0	6
AC.	11,000	0	1	0	0	0	0	0	1
AC.	12,000	0	0	0	0	0	0	1	1
AC.	13,200	0	3	0	0	0	0	0	3
AC.	32,000	1	1	0	0	0	0	0	2
AC.	33,000	0	0	0	3	0	4	0	7
Total		2	22	5	14	0	15	6	64
Direct Current	Voltage	I	II	III	IV	V	VI	VII	Total
DC.	90	0	1	0	0	0	0	0	1
DC.	550	35	0	0	0	11	0	1	47
Total		35	1	0	0	11	0	1	48
Total A.C. & D.C.		37	23	5	14	11	15	7	112

Note: The greatest number of cases of electrification successfully resuscitated, on the alternating current of 2300 volts, was 16 persons, and 6600 volts with 12 persons. On the direct current there was 47 persons receiving electric shock from 550 volts. This 550 volts is that most common in use in transportation industry. It will be noted on the high voltage of 33000 volts alternating current there were 7 persons successfully resuscitated.

ELECTRIC CURRENT AND VOLTAGE

Unsuccessful Cases (Dead)

Alternating Current	Group Voltage	I	II	III	IV	V	VI	VII	Total
AC.	110	0	0	0	1	0	0	3	4
AC.	220	0	1	0	0	0	0	0	1
AC.	2,200	0	0	0	0	0	0	6	6
AC.	2,300	1	2	0	14	0	11	0	28
AC.	4,000	0	1	0	0	0	0	0	1
AC.	4,400	0	1	0	0	0	0	0	1
AC.	4,600	0	0	0	1	0	0	0	1
A.C.	6,600	0	3	1	2	0	0	2	8
AC.	6,900	0	0	0	3	0	0	0	3
AC.	7,000	0	0	0	1	0	0	0	1
AC.	11,000	0	2	0	2	0	0	0	4
AC.	12,000	0	0	0	0	0	0	4	4
AC.	13,200	0	0	0	2	0	0	0	2
AC.	23,000	0	0	0	1	0	0	0	1
AC.	33,000	0	0	0	5	0	4	0	9
Total		1	10	1	32	0	15	15	74
Direct Current	Voltage	I	II	III	IV	V	VI	VII	Total
DC.	550	13	0	0	0	0	1	0	14
DC.	600	0	0	0	1	3	1	0	4
DC.	1,500	0	0	1	0	0	0	0	1
Total		13	0	1	1	3	1	0	19
Total A.C. & D.C.		14	10	2	33	3	16	15	93

Note: The greatest number of fatalities due to electrification was in the alternating current group which claimed 28 persons on the 2300 voltage. The 550 volt direct current claimed 14 victims. On the higher voltage of 33,000 volts there were fewer victims (9) than on the lower voltages. These figures show that the greater number of deaths are on the lower voltages than the high.

As regards which voltage is safe, there can be no dividing line, as many factors determine the severity of electric shock. We can only treat all current with the greatest respect as everything being equal and under like conditions, all current is dangerous to life even as low as 90 volts in our own experience.

METHODS USED IN RESCUE OF VICTIM

(Successful Cases)

Group Number	I	II	III	IV	V	VI	VII	Total
Victim freed self...	9	6	0	2	1	1	1	20
Victim fell or thrown	8	14	5	8	1	10	4	50
Victim rescued by another	20	3	0	4	9	4	2	42
Total	3'	23	5	14	11	15	7	112

Note: Of those persons who were resuscitated 50 were thrown free of or fell clear of the current; 20 were able to free themselves; 42 were so held to the current as to necessitate rescue by a fellow man. If these last 42 were not rescued by men at hand it is only plausible to expect them to have been fatal.

METHODS USED IN RESCUE OF VICTIM

(Unsuccessful Cases) Died

Group Number	I	II	III	IV	V	VI	VII	Total
Victim freed self...	0	0	0	1	0	0	3	4
Victim fell or thrown	0	5	1	14	0	10	9	39
Victim rescued by another	14	5	1	18	3	6	3	50
Total	14	10	2	33	3	16	15	93

Note: 50 were removed or rescued by another person from the electric contact and 39 fell or were thrown free of the current. It has been commonly said by those in the electrical industry that those victims who were shocked and fell from high places to the ground seemed to be easier to resuscitate and were not as apt to be fatal as those who were held to the current. It was stated that the act of falling and the counter shock of landing on the ground encouraged a return to animation. This cannot be accepted as the truth for many things must be taken into consideration, lack of perfect ground, small space of time in contact with the current, current throwing patient away from contact. The most important factor in rescue work is the immediate removal of victim from electrical conductor in the shortest possible time and avoid reshocking patient by not pulling them clear of the current at the first attempt.

Owing to the incompleteness of the record as to the complicating injuries received in addition to the electrification of the Group H series we will not be able to give the electric burns or electric flashes to eyes for this group. We will, in order to disabuse the minds of some of my audience state that electric burns and flashes carry with them a high percentage of deformities and disabling conditions, report here from Group A of another series. It is difficult to separate with any degree of accuracy first and second degree burns as one merges into the other. The burns listed here are first degree where the skin was reddened and blister formation present. Second degree burns where the destruction of the skin itself was evident and third degree will be where there was extensive destruction of underlying tissue and of nerves, blood vessels, etc. There was no loss of life in this group due to the burns nor from resulting complications nor were there any major infections developed in this group of burns.

GROUP A. ELECTRIC BURNS

Number of first degree burns	276
Number of second degree burns	130
Number of third degree burns	90
Total burns, group A	496

ANATOMICAL PARTS BURNED

Fingers and hand	258
Wrist, arms	58
Face, head, neck	139
Feet and toes	9
Ankles and legs	20
Thorax and body	12
Total	496

Number of loss time burn cases	220
Number of burns, no lost time	276
Total time lost account burns	2,334 days
Average loss time per case	4.7 days

Note: These combinations of anatomical parts were necessary on account of the burns extending from one part to another such as from fingers to hands and was counted as one burn. Also where two legs or two hands were burned was classed as one leg and one arm burn. There

were no permanent deformities or loss of function in this group except 5 amputations of fingers and toes due to gross destruction. Only 7 cases resulted in any marked scar disfigurement and these only very faint after the duration of one year. All scars are pliable and contractures are lacking and keloid formation in two cases.

ELECTRIC FLASHES TO THE EYES—GROUP A

Electric flashes to the eyes	389	cases
Eye flashes, no lost time	267	cases
Eye flashes, lost time	122	cases
Total days lost account eye flashes	267	days
Average day lost account of eye flashes	0.77	days

Note: Of the 389 cases in this group, there was no permanent loss of vision, nor was there any defect of sight developed afterwards. These cases were kept under observation yearly and no difficulty experienced. This is contrary to the usual claim made for damages in litigation suits elsewhere.

In closing we wish to make to each of you here present a personal plea that you use your influence toward the Society disseminating information regarding the hazards of electric energy and the methods of resuscitation to the people in your community.

In fact the medical profession is losing a golden opportunity in failing to encourage this work among the lay public.

The public utility companies in Chicago with which I have been associated the past twenty years have instructed their employees in this life saving measure and while we have been the pioneers in this movement in this country we have been the medium of saving many employees from premature death and numerous people who were not connected with the industry in any manner from a like fate. This same procedure has resulted in saving a large number of people from drowning and asphyxiation from lethal gases.

We maintain a first aid school in session throughout the year where the employees receive this training. These men are located at strategical locations and these men have saved many people by their prompt service until the arrival of medical authority.

In one year we trained over 183,000 school children in the metropolitan area of Chicago through 483 lectures and conducted examinations of the pupils in many schools in this work.

Graduates of the Chicago Rapid Transit Company first aid school won the first three out of four City Championship in First Aid in Chicago in competition with many other industrial teams.

Some 60 medals have been awarded to employees in life saving and meritorious first aid to the injured.

This work should be done by the medical profession through their various organizations and it is only by interesting ourselves in this subject that we will learn better methods of resuscitation. We will be able to reduce the cases of fibrillation of heart cases in electric shock only by constant research and study. These cases should not be allowed to die for want of interest and research by the medical profession and we cannot deny the fact that this research lies within the scope of our profession. I thank you for your attention.

DISCUSSION

Dr. Ciney Rich, Decatur: I enjoyed this paper very much indeed. As to the things he has said, I have nothing to add. I merely wish to mentioned a personal experience which I had last August. I was doing a minor surgical operation and experienced some difficulty in the operation. It was a very hot day and I became saturated with sweat. I was working with an ordinary head light attached to the light socket. After I finished operating I did a thing which no one should do, walked to the sink, turned on the water and started to wash my hands. The instant my hands struck the water I experienced the sensations which Dr. Fisher described so well. It is an experience which no man wishes to have a second time. I was helpless. I do not think I lost consciousness; I was standing stiff. I could not see, nor speak, but I could hear. My hands were pulled out of the water as soon as the connection was broken and I dropped in a heap.

The reason for the shock was that the electric wire used in this light had a thin insulation which was not waterproof. I wish to make a plea to the doctors who do work with headlights to see that your wires are insulated properly with adequate insulating material, because if you do not you are going to have the same experience. I felt as though I had come to the end of my string when this thing happened to me. That very afternoon every wire in the operating room at St. Mary's Hospital, Decatur, was rewired with cables properly insulated and water tight.

Dr. C. P. White, Kewanee: There is one feature which I think should be added to this paper which is indeed a very good paper. That is the use of antitoxin in these electric burns, giving it immediately. A couple of years ago I had a case of a man burned with a high tension wire. Every bit of antitoxin in our hospital had been used in a case one of the doctors had at the same time. It was about fifteen hours after

the accident before the antitetanic serum was given to this patient and then only 1500 units. There might be some criticism because I know that at least 5000 units should probably have been used. Ten days elapsed and the patient was removed to his home town and placed under the care of a very competent man. Fourteen days from the date of the accident he developed tetanus. The doctor started to give him an intravenous injection of antitetanic serum, not knowing that he had previously received an immunizing dose of 1500 units, with the result that after the first drop or two the patient went into shock and for three or four hours there was a lot of trouble. Although this patient survived, it certainly brought home to us who had part in it the necessity of giving antitetanic serum quickly and then giving it in sufficient amounts to make sure tetanus is very unlikely to occur. It did not seem that this particular case needed antitetanic serum. The burn was severe. It was a burn of the neck and foot. The boy fell from a twenty-foot pole onto a grassy spot and it was not apparent that there was any particular dirt other than the natural dirt on the body accruing during his work as a laborer. Nevertheless that condition existed as stated.

Another thing which Dr. Fisher brought to our attention was to inform the medical men and the surgeons as well throughout the state of the necessity of allowing these first-aid groups to give first-aid and not to interfere with them too much. Only last year a doctor was called on one of these cases that occurred about five miles in the country. He took the patient away from the first-aid group to a hospital where they could use the pulmotor and by the time they got there he was dead. This was a very good man but negligent of the care of electric shock. I think the medical profession should take this rather seriously and we should disseminate the knowledge that such men as Dr. Fisher have tried to give us.

Dr. Frank Chauvet, Chicago: Dr. Fisher presented a very fine paper. I think he should stress the serious effects of low tension currents. Up to a few years ago it was not know that these low tension currents would produce injury. It was said that a horse would die from a 500 volt shock. We know in experimental work with currents up to 5,000 volts, that the higher voltages are uniformly fatal and accompanied by burns. In a series of experiments, which I conducted, dogs that were connected by the two hind legs and given an electric current of 110 volts showed practically no fatalities. Those connected by the front paw and hind paw on same side resulted in 65 per cent. fatalities. When the front paw on one side and the hind paw on the opposite side were connected, there were 100 per cent. fatalities. These animals were immediately opened so we could observe the heart. We found ventricular fibrillation. The auricles continued to beat quite frequently for three to five minutes and the dog breathed, while there were no ventricular beatings, only a complete fibrillation. The direction of the current going through the body is probably the most important matter.

In the dogs where the current was applied to the tip of the nose and the nape of the neck, death occurred in 50 per cent. Death was due to respiratory failure and not cardiac failure. A great many of our cases suffer shock with respiratory failure. Once the current goes through the heart, with the ventricles fibrillating, we have no record of resuscitation by any method, adrenalin or otherwise.

A great deal of our apparatus is exceedingly hazardous. We have toasters, percolators and vibratory machines in the bathtub. Those are the cases where they get an ordinary shock of 110 volts, undoubtedly passing from the arm or leg through the heart. Direct currents are not nearly so dangerous. They can stand 400 or 500 volts with direct current. If you interrupt that direct current the fatalities are enormous. In the dogs where the hair was dry a great many were not killed, but the dogs with wet hair had a high mortality. Those in which the hair was shaven with or without wetting were killed. Dogs weighing 20 to 30 kilos, given 110 volts were killed. Of those given 80 volts a few recovered. Those given 40 volts were killed only after exposure for 40 to 60 seconds, showing that the time element is important.

The big lesson to be derived is that there is danger from ordinary instruments. If the shock goes through the heart the cases are fatal. You will see electricians went their finger and test out a socket. If he is standing on a wet floor he will never try that again. The fatality from a current of 110 volts is practically 100 per cent. if the current traverses the heart because you have a definite fibrillation of the ventricle as proven on opening up dogs before and after such a current. In these cases we have no recoveries.

Hart E. Fisher, M. D. (closing discussion): As regards antitetanic serum, up to two years ago in our various companies we never had had any tetanus develop following electrical burns. In the early days, some twenty years ago, a question of the use of tetanus serum came up and for a period of a year we gave antitetanic serum as an anaphylactic. The distressing effects following the injection of this serum, especially in younger subjects, caused us to discontinue this practice. This was immediately following the war.

The one case that developed tetanus was in a man of approximately twenty-four years of age, who had a severe third degree burn and the source of his infection resulted from the use of blankets to cover him with in transport. This man developed a typical tetanus from which he died.

A few words about interfering with first aid work as given by the first aid layman. We have experienced the fact that these boys perform their work of resuscitation immediately after rescue of the patient and persist in their methods until the arrival of the doctor. Many times the doctor demands that they stop all resuscitation while he makes an examination of the heart or gives medication. This is useless, stopping the resuscitation, and often determines whether the man lives or dies. Any examination or medication can be instituted while resuscitation is in force. Many times the doctors insist

that the artificial respiration be stopped entirely and to my mind this is bordering on malpractice. If the doctors have nothing better to offer in their therapy, then they should at least permit this artificial respiration to continue.

In the past three years we have given 463 lectures to 183,000 school children on this subject, by invitation, and of these, some 4,000 examination papers were examined and marked for the schools.

In closing we ask that the medical societies interest themselves in this work of resuscitation and aid in disseminating the knowledge of its performance to the public.

THE DISABLED GALL BLADDER*

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If advanced lesions of the gall bladder—which cause serious lesions of surrounding viscera and even threaten life—are to be prevented, the disabled gall bladder represents one type of biliary disease that must be recognized and treated more frequently than is at present the case.

So frequent have deaths from gall bladder disease become in the United States that the Bureau of the Census will no longer classify them with deaths from diseases of the liver. I am informed by the Bureau that figures for 1930, when this new classification was adopted, are not yet available, and the only figures they can furnish reveal that in 1929 gall stones alone caused 4,354 deaths in the registration area, for which the rate per 100,000 population was 3.7. This is a warning that gall stones are not the innocuous things that they are often believed to be.

Graham, Cole, Copher and Moore[1] state that studies of the work of others lead them to believe that 25 per cent. of the adult population have gall stones and probably an equal number have cholecystitis without stones. This means that from 40 to 50 per cent. of the adult population have disorders of the biliary system which may at any time give rise to more or less severe symptoms in the individual case. In 1926 Mentzner[2] published the results of his findings in 312 routine post mortem examinations performed at the Mayo clinic. In these he found evidence of cholecystitis in 66 per cent of the cases and in only 8 per cent. of the 612 cases had a primary diagnosis of cholecystitis been made. Mentzner also states that only 5 per cent. of 49,659 new cases at the Mayo clinic entered complaining of biliary diseases as the primary symptom.

All these facts indicate clearly that serious disease of the biliary system is becoming more and more frequent. Naturally the question is raised: why is this so?

Diabetes mellitus has always been included as one of the main causes of gall bladder disease. The liver is the great sugar furnace of the body. In it the sugar ingested is changed to a chemical product—glycogen—capable of being assimilated by the body and in performing this biochemical reaction the organ is subject to constant stress if it is over pressed. When the Islands of Langerhans of the pancreas break down in their work sugar is excreted in the urine but before this time in many cases the liver is subjected to great metabolic pressure and appears to fail in another of its biochemical functions resulting in cholesterolemia and consequent gall bladder change. There is, therefore, a close relationship between the occurrence of diabetes mellitus and biliary disease, and this relationship seems to depend largely upon sugar consumption.

Now in 1917-1918 the per capita sugar consumption in the United States was 78.5 pounds. Since then the per capita consumption has risen markedly, reaching its peak in 1925-1926, when it was 114.4 pounds. In 1929-30 it was 103.3 pounds per person.

In other words, the average human liver of 1929-30 had to do 33.1 per cent. more work in sugar metabolism than the average human liver of 1917-18.

This is especially significant when the record of deaths from diabetes mellitus for the same years is considered.

During this same period, from 1918-1929, the deaths from this cause have increased steadily from 15.9 per 100,000 in 1918 to 18.8 per 100,000 in 1929, the peak being reached in 1928 when the rate was 19.0 per 100,000. All this, observe, has occurred in spite of the fact that insulin was made available to the medical profession in November of 1922 and has been used constantly since that time.

During the period from 1901-1905 the death rate from diabetes mellitus in the United States was 2 per 100,000, equalled by only one other country in the world, Porto Rico, which was the

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same, i. e., 2 deaths per 100,000 population. All other countries mentioned in the data of the Prudential Life Insurance Company had a higher death rate, the highest being Sweden with a death rate of 11 per 100,000. In the years from 1921-1925 the death rate from diabetes mellitus in the United States averaged 17 per 100,000, which was exceeded by only one country in the world, the Netherlands, which had a death rate of 18 per 100,000.

Thus we are led to the startling observation that in the space of twenty years the United States has changed from the position of equalling the lowest death rate from diabetes mellitus in the world to the position of next to the highest death rate of any country in the world from that disease.

During the years from 1918-1929 the death rate from alcoholism has increased from 2.7 per 100,000 in 1918 to 3.7 per 100,000 in 1929, and the deaths from cirrhosis of the liver of the "hob nail" type due to alcoholism have decreased from 9.6 per 100,000 in 1918 to 7.2 per 100,000 in 1929.

Deaths from typhoid fever, another of the common etiological factors in biliary disease, have, during the period from 1918-1929, decreased from 12.6 per 100,000 to 4.2 per 100,000, a decrease of 67.46 per cent. This means that the number of cases of biliary disease which might be explained on the basis of typhoid fever must be accounted for by other etiological factors.

I think it is fair to assume, from these facts, that part at least of the increased seriousness of gall bladder disease is due to the increased use of sugar as an article of diet among the people in this country and the consequent overtaxing of the physiological functions of the liver.

And inasmuch as the increase has occurred since the attempted removal, by law, of fermented malt and grape sugars from the diet of the average citizen of the United States, an important question may be asked: has the health of the people of this country been benefited by this social change—prohibition—as far as biliary disease is concerned?

Pathology. A study of the pathological lesions found in the gall bladder allows the disease to be divided into three types which may merge one into the other in that one, two or three may be present at one time but nevertheless each type presents distinct characteristics peculiar to itself. These types are:

1. The biochemical type.
2. The mechanical obstructive type.
3. The infectious type.

Of the three types the most important from the standpoints of diagnosis and early treatment is the first or biochemical type. That one of the functions of the gall bladder is the concentration of the bile by absorption of fluid has been shown by the work of numerous investigators, Aschoff[3, 4] and Rous and McMaster[5] among others. If, during this process of absorption, there is present a high cholesterolemia, depositions of cholesterol ester will take place in the mucosa of the gall bladder and these give rise to further derangement of function of the organ. This process has been carefully studied by Boyd[6] who has demonstrated the deposits of cholesterol ester in the mucosa of the gall bladder by using the dissecting microscope and special stains. Boyd believes that the cholesterol in the mucosa is derived from the bile. Other observers claim that cholesterol is excreted by the mucosa of the gall bladder but the weight of evidence seems to favor the ideas of Boyd.

The gall bladder of this type is known as the now familiar "lipoid" or "strawberry gall bladder" and is not necessarily accompanied either by gall stones or infection. It does, however, cause clinical symptoms which in many cases do not include the severe colicky pain in the right upper quadrant of the abdomen which has become so associated with biliary disease.

Symptoms. The symptoms of this type of gall bladder disease are rather more symptoms due to disturbance of liver physiology than symptoms due to disturbance of the gall bladder itself. It is, in a way, unfortunate that the old terms, biliousness and dyspepsia—in common use twenty-five or thirty years ago have almost disappeared from the medical vocabulary, for in their intent they expressed the syndrome that today is recognized as that of bio-chemical disturbance of the gall bladder. The patient complains of a dull heavy feeling in the epigastrium and states that when eating he fills up quickly. There is more or less flatulence coming on a few hours after meals and lasting for an hour or so which is accompanied by a feeling of distension. This is

increased by certain foods, usually those heavy in carbohydrate or fat and sometimes a raw apple, cabbage or tomatoes will make the condition much more marked. Constipation is the rule.

Routine physical examination elicits little change from the normal. The complexion may be a bit sallow and the outer edge of the sclera may show a slight yellowship tinge. There may or may not be perceptible tenderness over the gall bladder area and over the descending colon and sigmoid.

The diagnosis, therefore, depends upon other than routine physical examination. A sign that has proved of great value to me is the presence of a band of hyperesthesia on the right of the vertebral column extending over one or two intercostal spaces, usually the eighth and ninth or ninth and tenth beginning in the median line of the back and extending forward almost to the midline. It is due to the transmission of hypersensory impulses through the afferent sympathetics to the spinal cord which cause the referred hyperesthesia of the sensory nerves of the skin corresponding to the area innervated by afferent somatic nerves belonging to the same segment of the cord. The sign is elicited by scratching the back with a pin lightly, beginning above and passing downward until the patient notes the hyperesthesia. The same procedure is carried out from below upward and the lower limit of the band determined in this way. In my experience this sign has been present in nearly every case of gall bladder disease and I hesitate to make a diagnosis of this condition if it is absent.

The disturbance of skin sensations in visceral disease was described by Head[7] in 1893. Head stated that in biliary disease the maximum hyperesthesia to pin pressure and heat was over the eighth dorsal vertebra posteriorly and on the left side as well as the right. Autopsy, however, demonstrated that in his case there were pericholecystic lesions affecting the stomach and duodenum. Stern[8] calls attention to Boas' pressure point situated to the right of the tenth to twelfth thoracic spine as a diagnostic point in gall bladder disease and calls attention to the hyperesthesia of the Head zone over the distribution of the eighth and ninth thoracic nerves in front over the gall bladder region and also speaks of inactive cholecystopathy being diagnosed as lumbago because of painful hyperesthesia over the eighth and ninth intercostal spaces posteriorly. He also states that the Head zone may be transposed to a point over the spleen but does not state whether in these cases pathological lesions were found in or around stomach, duodenum, or pancreas. Peterson[9] discusses the value of Head's zones as a diagnostic aid. He states that in chronic cholecystitis or cholelithiasis the hyperesthesia is absent but is present in 40 per cent. of acute cases. He locates the zone, however, over the anterior ends of the nerves under the rib margin and does not discuss the presence of hyperesthesia posteriorly. I believe the most important area in which to determine hyperesthesia extends from the midline posteriorly forward on the right side of the back to the posterior axillary line and I place more confidence in this as a differential diagnostic point in cases of early disease of the gall bladder than in either the anterior zone of hyperesthesia or the Boas pressure point. If a zone of hyperesthesia can be demonstrated on the left side as well, either pericholecystic disease involving stomach, duodenum or pancreas or intrinsic disease of these viscera should be suspected.

Laboratory findings in cases of biochemical disturbance of the gall bladder are of little value. The percentage of hydrochloric acid in the stomach varies in both directions from normal or may be unchanged. Pratt[10] examined a series of about 40 cases of gall bladder disease in the University of Nebraska Hospital to determine the percentage of free hydrochloric acid present in the stomach contents. In 55 per cent. of the cases the acid was normal or slightly increased, in 45 per cent. it was diminished and in three of these latter it was absent. These results coincide with the observations of other investigators and the only definite point determined by Pratt was that the more serious cases showed a marked diminution or absence of free hydrochloric acid. There is no definite change in the blood count. As a rule in these early cases there is no retention of bile causing an increase of bile pigment in the blood serum and consequently the van den Bergh tests are of questionable value. The estimation of the amount of cholesterol in the blood may be significant and an index of two grams or more per liter of blood established by the colorimetric method of Bloor[11] is said to show a

tendency toward gall stone formation. Whipple[12] reports that in a series of some 40 proved gall stone cases about 40 per cent showed a high cholesterol index. He also states that the test shows a high cholesterol index in many other conditions many of which are associated with gall bladder disease.

X-ray examination of the biliary tract is of value. In 1924 Graham and Cole[13] demonstrated that phenolphthalein containing either iodine or bromine injected intravenously into animals or man was excreted in the bile in sufficient concentration to cast a shadow on a film when exposed to the x-ray. Since the original contribution the technique has been greatly improved and cholecystography is now a routine method of examination in suspected gall bladder cases. By its use the filling and also emptying time of the gall bladder can be estimated with fair exactness and thus its normality or abnormality determined. In biochemical disturbance of the gall bladder there is no mechanical obstacle to the entrance of bile into the gall bladder through the cystic duct but frequently due to the alterations in the wall of the gall bladder the emptying time is delayed and bile is retained in the gall bladder longer than the usual two-hour interval following a fat meal. As this type of gall bladder disease is not accompanied by pericholecystitis there are no irregularities in the contour of the gall bladder. While discussing the Graham Cole test I offer the opinion that films should be taken stereoscopically as other shadows may simulate the shadows of gall stones and the differentiation may be made easily by study of stereoscopic films. Recently a patient presented herself in whom the flat film of the gall bladder showed a shadow which looked like that of a stone in the cystic or common duct. When looked at stereoscopically it was easily seen that the shadow was on a plane posterior to the biliary structures, apparently on the posterior wall of the body, and re-examination of the patient revealed a small pedunculated pigmented fibroma of the back the significance of which had escaped notice on physical examination. X-ray of the colon frequently demonstrates the descending colon and upper sigmoid constricted with poorly marked sacculations, an appearance characteristic of so-called spastic colon, which commonly accompanies disease of the gall bladder, but which does not show the findings of mucous colitis.

The diagnosis in biochemical gall bladder must consequently be made from an evaluation of a complete and careful history and the physical signs that may be elicited together with the x-ray findings. Other forms of disease which might give similar symptoms such as ulcer of the stomach, carcinoma of the stomach, cirrhosis of the liver, chronic appendicitis and digestive symptoms due to pelvic disease, must be ruled out. If the diagnosis can be fairly established in this way the operation of cholecystectomy followed by a proper dietetic regime is indicated. Non-operative measures, such as biliary drainage, drugs and dietary management have not given sufficiently good results to warrant the belief that the pathological process can be checked by such means. As a rule, the condition of simple biochemical abnormality progresses to the stages of gall stone formation or infection and when these stages are reached operation is not only much more difficult and dangerous but also the recovery is apt to be more tedious and less complete. After operation in cases in which the pathological lesion has not reached beyond the stage of the lipoid or strawberry gall bladder the assurance of practically a complete recovery to normal can be offered to the patient.

At operation at first glance the gall bladder may appear normal. There are no adhesions and the fundus of the organ appears bluish in color and does not seem thickened. Careful search will, however, show abnormalities characteristic of the condition. Fine white streaks may be found on the anterior surface of the liver at the point where the fissure for the gall bladder meets the anterior surface. These radiate from the point of attachment of the fundus of the gall bladder in a fan like manner. In very early cases they are difficult to find, as they are evidences of hepatic disturbance due to the gall bladder lesion and consequently are not large, but if carefully searched for they will usually be seen. Passing down from the fundus toward the neck of the gall bladder the wall loses its translucency and a deposit of yellowish fat is seen beneath the peritoneum. The smaller branches of the cystic artery are quite prominent. The wall of the gall bladder in the region of the cystic duct is thickened and the lymphatic

gland lying alongside the cystic duct between the layers of the gastrohepatic omentum is enlarged. In these cases I believe that the appendix, if present, as well as the gall bladder, should be removed.

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TABLE 1. DEATH RATES PER 100,000 POPULATION IN THE DEATH REGISTRATION AREA IN CONTINENTAL UNITED STATES, COMPILED BY THE BUREAU OF THE CENSUS

Year	Diabetes Mellitus	Typhoid and Parathyphoid	Alcoholism	Cirrhosis of the Liver
1918	15.9	12.6	2.7	9.6
1919	14.9	9.2	1.6	7.9
1920	16.0	7.8	1.0	7.1
1921	16.8	9.0	1.8	7.4
1922	18.3	7.4	2.6	7.4
1923	17.7	6.8	3.2	7.2
1924	16.4	6.7	3.2	7.3
1925	16.9	8.0	3.6	7.3
1926	18.0	6.5	3.9	7.2
1927	17.5	5.5	4.0	7.5
1928	19.0	4.9	4.0	7.6
1929	18.8	4.2	3.7	7.2

TABLE 2. SUGAR SUPPLY AVAILABLE FOR CONSUMPTION IN CONTINENTAL UNITED STATES 1917-18 TO 1930-31.* IN TERMS OF RAW SUGAR

Year Beginning July	Available for Consumption Total Short Tons	Per Capita Pounds
1917-18	4,037,377	78.5
1918-19	4,371,013	83.8
1919-20	4,816,862	91.1
1920-21	5,242,852	97.6
1921-22	5,589,624	102.4
1922-23	5,899,849	106.5
1923-24	5,646,223	100.2
1924-25	6,540,695	114.2
1925-26	6,647,627	114.4
1926-27	6,518,486	110.6
1927-28	6,568,090	110.1
1928-29	7,192,282	119.0
1929-30	6,364,548	103.3
1930-31	6,391,976	103.0

*Figures from 1931 Year Book of the Department of Agriculture, U. S. A. Corrected April, 1932.

TABLE 3. DEATH RATES FROM DIABETES THROUGHOUT THE WORLD

(Compiled from published data by John R. Gore, vice-president and actuary, Prudential Life Insurance Company of America. Deaths per 100,000 population.)

Country—	Diabetes 1901-1905	Diabetes 1921-1925
Austria	6	12
Chile	3	6
England, Wales	9	11
Hawaii	3	8
Ireland	7	7
Japan	3	2
Netherlands	8	18
New Zealand	9	13
Ontario	9	12
Porto Rico	2	2
Scotland	7	10
Spain	4	7
Straits Settlements	4	3
Sweden	11	13
Switzerland	6	9
Uruguay	3	6
United States	2	17

BLOOD TRANSFUSION

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Blood transfusion is a most valuable therapeutic procedure; dangerous, when misused; most useful, most efficacious, often life-saving when properly employed. It is deserving of increased popularity. The accidents and fatalities that have occurred were due to faulty technique or to improper cross-checking of bloods. Its mechanical difficulties have been minimized and can be mastered with little effort and little expenditure of time. General practitioners should become increasingly familiar with its practical usefulness, indications, limitations, dangers and technique.

The fear of blood-transfusions, existent in the minds of many physicians, is based not on actual experience but merely on certain preconceived impressions. Blood-transfusion must be timely: one should not wait for the patient to be moribund before resorting to it. The effect of blood transfusions is impressive; the pulse is improved, the face loses its ashen color, air hun-

ger and ominous yawning disappear, etc. The life of the transfused corpuscles is said to extend for at least twenty days. It is reasonable to assume that the beneficial results of transfusion are due in part to the functioning of the transfused corpuscles.

The physician should familiarize himself with the very interesting biological problem of blood-grouping. The blood of human beings has serological peculiarities which make certain bloods incompatible. The four main human blood groups (sub-groups have been reported) have sharply defined and readily determined characters which are fixed, inherent and inherited

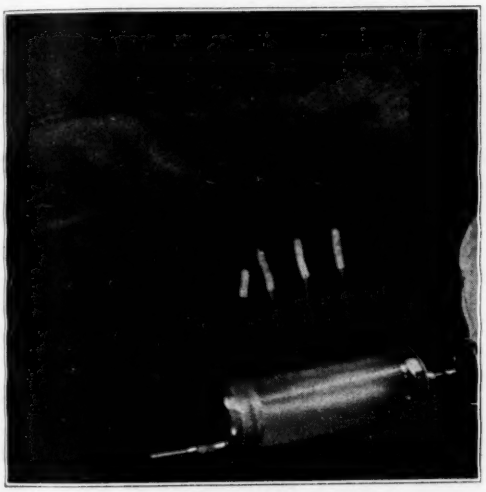

Fig. 1. Bécart autoparaffining, aspirating and propelling syringe.

properties of the individual. Disease does not change an individual's blood-group. The testing of a patient's blood-group need be done but once, for the group characteristics do not change. These groups and sub-groups exhibit various compatibilities and incompatibilities. For a blood-transfusion to be free from danger to the recipient (to the donor, the dangers are negligible), it is absolutely essential that the serum of the recipient should neither hemolyze nor aglutinate the red blood cells of the donor. The regeneration of the blood takes place at the rate of 100 to 150 c.c. per week. The great danger of the procedure, incompatibility of the donor's and the recipient's blood, is avoided by careful direct cross-matching of the donor's and recipient's bloods immediately before each and every transfusion. The donor's blood must not be toxic to the recipient's blood nor vice versa. Even the subcutaneous injection of incompatible blood may provoke serious local and general disturbances.

Cross-checking of the donor's and recipient's blood is easy of performance, rapid of execution and reliable in detecting compatibility and incompatibility; it has shorn blood-transfusion of almost all its difficulties and dangers, and has placed the procedure in the domain of the general practitioner. The technique of blood cross-checking has been simplified to such an extent that transfusion can be performed not only in small hospitals but also in homes.

Immediately before transfusing, the medical attendant will cross-check the donor's red blood-cells against the recipient's blood serum and the recipient's red blood-cells against the donor's serum. Cross-checking is all-important, as experience has shown that blood-grouping alone does not offer an absolute guarantee of blood compatibility in any actual transfusion. In emergencies, we do not type the bloods, we merely do a direct compatibility test between the serum of the recipient and the cells of the donor and vice versa. Universal donor and universal recipient are only relative terms. Though two persons may be the same group type, the serum of either may agglutinate the cells of the other. The best authorities have not noted a single instance of auto-agglutination.

We always use non-modified, non-altered, non-diluted unchanged whole blood; and thereby, place immediately in the vein of the recipient all the constituents of value to the individual. Blood is a solution of many substances; it transports heat from one part of the body to another and contains water-soluble foodstuffs for the cells and water-soluble products of organ activity. The formed elements floating in the blood, the red blood-cells, the white blood-cells and the blood-platelets do not reproduce themselves within the blood-stream but pass into it from the organs which form them. Whole-blood is always superior to any artificially prepared colloidal mixture. It is five times more viscid than water. Normal salt and analogous sera cannot replace blood.

Attempts to retard coagulation by the addition of drugs impair the value of the blood from the

biologic and immunologic point of view. Many clnicians claim that anti-coagulant drugs reduce the phagocytic and opsonic powers of the blood and increase the fragility of the erythrocytes. Sodium citrate leads to destruction of blood-platelets. The whole-blood method has the additional advantage of being followed by fewer post-transfusion reactions. The latter occur in about 35% of citrated blood-transfusions, and in only about 15% or less of unchanged blood transfusions.

Confronted by a set indication the first thing to do is to select a suitable donor. The selecting of a donor from the same family has no advantages except those of economy and sentiment. A suitable donor is the first and foremost requisite for a successful transfusion. By a suitable donor, we mean one who is not substandard in weight, who is in good health, who is free from any communicable disease and whose blood will neither agglutinate, nor hemolyze the recipient's blood nor be agglutinated nor hemolyzed by it. Male donors are to be preferred as usually their subcutaneous veins are more visible, are easier of access and their blood-volume is larger. We eliminate constipated individuals. Owing to the fact that toxic products of digestion in the donor's blood may cause a general reaction in the recipient, we prefer a fasting donor (about 12 hours). The selecting of a healthy donor assures the recipient blood of superior quality and protects the donor against a loss that he can not safely sustain. Be especially careful to exclude malaria, tuberculosis and syphilis, past or present. Micro-parasites may be transferred from one individual to another; malaria, however, is inoculated intravenously with difficulty. To exclude syphilis, the Kahn test is serviceable; it is sensitive, reliable and does not consume more than half an hour. No blood donor should be accepted whose hemoglobin is found to be less than 85% of normal.

The amount of blood to be transferred varies with the age and physical condition of the recipient. It would not be rational to give the same amount of blood to a man 6 feet in height and weighing 200 pounds as to one five feet in height weighing 100 pounds. I never transfuse more than 500 cu. cm. at one sitting.

Direct cross-matching is performed by suspending the donor's red-blood cells in the recipient's serum and vice versa. Proceed as follows: 1. Assemble the following: 4 small test-tubes, two glass-slides, a few cover-glasses, two glass-pipettes, 1% solution of sodium citrate in normal saline solution and a microscope. 2. Withdraw by means of a needle puncture, from the donor's cleansed ear-lobe, cleansed finger or any other eligible site, a half-cubic-centimeter of blood. This is collected in a test-tube containing 5 cm. of 1% solution of sodium citrate in normal saline solution. 3. Collect also one-half cubic centimeter of the donor's blood in an empty test-tube.

4. Collect similarly like amounts of the recipient's blood. There are now four test-tubes carefully numbered: two of these test-tubes contain pure blood and two contain a suspension of red cells in a one-per cent. solution of sodium citrate in normal salt solution.

5. Place two drops of the donor's serum and two drops of the recipient's red-blood cells, close to one end of a glass slide, stir gently and place thereon a cover-glass. Close to the other end of the same glass slide, place two drops of the recipient's serum and two drops of donor's red-blood cell suspension, stir. Place a cover-glass on top.

6. Examine these two cover-glass preparations under the microscope with low and high power; observe for fifteen minutes. If at the end of fifteen minutes, agglutination be absent from both glass slide preparations, if the blood corpuscles do not present a granular appearance, the bloods are compatible. Agglutination means incompatibility, it means possible hemolysis and hemolysis means dangerous and perhaps fatal reaction. Agglutination calls for the rejection of that particular donor in that particular case.

Indications: Blood transfusion is indicated:

1. After acute profuse hemorrhages medical, obstetrical, surgical or traumatic. These hemorrhages may be post-abortum, post,partum, may occur in the course of gastric, duodenal and intestinal ulcers, with a rupture of an ectopic fetal sac, in the course of placenta previa, in wounds of large vessels, etc. Death following hemorrhage is usually due to a blood-volume deficit and not to a hemoglobin deficit. Large hemorrhages cause a fall of arterial blood-pressure; when after a hemorrhage, the maximal and

minimal blood-pressure fall progressively, it is agreed that blood-transfusion is indicated. Though transfusion does not replace the total amount of blood lost, it aids to restore blood-volume by adding fluid-bulk to the blood-stream, and by increasing the member of circulating red blood-cells it lessens the deficient oxygen carrying power of the patient's blood. It combats whatever degree of shock is present and stimulates hematopoiesis. Several successive transfusions may be necessary to restore the hemoglobin and red blood-cells to an approximately normal level.

2. To arrest hemorrhage that cannot be controlled by other measures. The value of whole, unaltered, unmodified, undiluted blood as a hemostatic agent is established. Transfusion has given striking results in hemorrhages of the new-born, in purpura hemorrhagica. In hemophilia, blood transfusion has saved lives. In hemorrhagic conditions, it is well to supplement blood-transfusions by the administration of calcium, either intravenously, intromuscularly or orally. Hemorrhagic conditions arise partly from the diminution of the calcium available for the purpose of coagulation.

3. In shock associated with, or consecutive to, hemorrhage. In complete vaso-motor collapse, the vascular bed suddenly becomes larger than the blood volume. Transfusion increases the oxygen carriers of the blood and the venous return to the heart.

4. As a preoperative measure, to limit hemorrhage in jaundiced patients. In chronic obstructive jaundice, blood transfusion increases the blood-pressure, decreases the toxicity and reduces the coagulation time.

5. As a pre- and post-operative measure to prepare substandard or surgically handicapped patients, such as suffer from malnutrition, chronic infection, secondary anemia, etc.

6. In the post-operative treatment of acute mastoiditis, sinus thrombosis, otitic septicaemia, etc.

7. In uterine cancer, as a preparatory or supporting measure in radium or roentgen-ray therapy.

8. In certain medical conditions; to supply blood-platelets, as in purpura; normal serum, as in nephroses, and in some allergic conditions granular cells, as in agranulocytosis.

9. In secondary anemias: The added blood seemingly acts beneficially by leading to increased activity of the blood-forming organs and by modifying the hemolytic problems that cause the anemia.

10. In sepsis: The value of blood transfusions in septic infections has not been definitely determined. Some clinicians maintain that the transfused blood exerts a direct bactericidal action on the infecting organism, that it aids to overcome the secondary anemia and to build up the patient's general condition. Patients actually dying from sepsis are not improved by blood transfusion owing to the inability of the greatly damaged excretory organs to properly care for the large amount of suddenly introduced foreign serum.

Technique: Many valuable methods and ingenious instruments have been devised for blood transfusions. The method we recommend has the merit of simplicity, safety, efficiency and rapid collection and propelling of the blood. We use an aspirating and propelling syringe, Bécart provided with a piston that automatically coats the interior surface of the syringe with a special wax preparation. The passage of blood over a rough surface hastens coagulation, therefore, it is necessary that the inner surface of the syringe, nozzle, obturators, needle and plunger be well paraffined. In blood-transfusions, the greatest mechanical difficulty to overcome is blood clotting. The compatibility of the donor's blood and recipient's blood having been determined, having been verified, donor and patient are placed on adjacent tables. Then the operator tests his instruments, all of which have previously been sterilized by heat, dry or moist. He sees that the needles are not plugged, that the syringe does not leak, that the internal surface of the syringe and plunger of the piston are well-coated, well lined with paraffin. The syringe used has an eccentric nozzle; this allows the operator to rest the syringe on the surface of the arm or forearm during use. The paraffin coating must be done with care, as the donor's blood must not, in being conveyed to the recipient, come in contact with the air nor with any surface that is not lined with paraffin. Any method that makes use of rubber tubing is open to criticism for that reason alone. The needles

that we use fit directly into the cannulated end of the nozzle.

Any visible, easily accessible, subcutaneous vein may be used to withdraw or to inject blood. Almost always, we select one of the veins on the anterior surface of the bend of the elbow usually the median basilic or the median cephalic. Place a tourniquet around the donor's and one around the receptor's arm; the purpose of this is to distend the superficial veins; see that the arterial circulation is not embarrassed. The tourniquet is retained on the donor's arm until the necessary amount of blood has been withdrawn. It is loosened from the recipient's arm immediately after the successful introduction of the needle into the vein. The recipient and donor are asked to contract the muscles of the forearm so as to distend the superficial veins. The bend of the donor's elbow having been surgically prepared, the selected vein is exposed and freed from surrounding tissues by a 1 cm. incision perpendicular to the course of the vessel. Pass a double catgut thread beneath the vein and introduce the needle of the syringe into the donor's vein; the needle-point being directed to the periphery. The needle is fixed to the vein by one of the catgut threads mentioned above. The other thread can serve to ligate the vein if necessary at the conclusion of the transfusion. The same procedure is employed in the recipient with this major and important difference, that in the recipient, the needle is introduced with its point directed in the direction of the venous current. Though many clinicians enter the selected veins through the uncut skin, the introduction of the needles is far more easily performed if the selected vein of the donor and that of the recipient be exposed by a small incision to direct vision. This calls for a small incision not over one-half inch in length and perpendicular to the veins selected. In the recipient, because of the very low blood-pressure and small collapsed veins, it is almost always necessary to expose the vein so as to introduce the needle under direct vision. When during a transfusion, the recipient experiences some alarming symptom, such as marked dyspnea, cervical constriction, precordial distress, etc., stop the procedure at once. Speed is desirable in a blood-transfusion, in fact, it is really the key-note of success. Delay favors clotting, the great stumbling-block of whole blood injections.

During and for some time (for several hours) after the transfusion, the donor (if possible) and the recipient always should be kept in bed, in the recumbent position.

THE CARE OF THE INDIGENT POOR—SICK AND WELL*

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In March, 1930, Dr. Harry M. Hall, one time President of the West Virginia State Medical Society, wrote the following editorial in their medical bulletin:

WHO IS RESPONSIBLE FOR THE POOR?

"Who is responsible for the poor? Certainly not the doctors. The medical profession had nothing to do with their poverty. It is the economics and the chaotic living conditions of the outside world. They cannot obtain a livelihood, so are not fed, sheltered or clothed. They, therefore, through lack of resistance, fall prey to disease. No chain store gave them food. No mail order house gave them clothing. No statesman worked out a solution for their maintenance with self-respect. No politician gave their plight a real thought. Mergers, combines and chain stores threw some of them out of employment. It was too late to get anything else. What will be done with them? Shoulder them on a hospital and let the doctors do what they can. But how? Free, of course. Up go hospital rates. Then critics dispose of us in sarcastic terms about the high cost of medical care. Had we collected our accounts and had no promiscuous free service no one would have ever heard of the high cost of medical care. Our philanthropy was really the cause of our undoing."

Think it over. The thoughts just read would apply, in one way or another, to any company of human beings from the days of Noah to Julius Rosenwald and Company. In proportion to our professional and economic progress, how much better are we doing today than did our predecessors of centuries ago? Think that over, too. And remember that I'm supposed to talk twenty minutes on a subject that has been argued over for 2,000 years—"the poor ye have always with

*Read at Secretaries Conference, Springfield, May 17, 1932.

you," so don't expect either a complete discussion or a complete solution.

There are two classes of "indigent poor." One, the professional pauper who believes the rest of the world owes him—or her—a living and whose two ambitions are reproduction and perfect attendance at the supervisor's office. For this class I have as little use or time as possible—I cannot evade it entirely. What we do for it is not charity—it is necessary *scavenger work.* Anything we can do to lessen the quantity and quality of this scavenger work by the sterilization of degenerates, for example, and compulsory preventive medicine, it is our duty to do, both to help them and protect our own. The other class, composed of the real "worthy poor," the people who through no fault of their own are absolutely unable to have the bare necessities of life, is deserving of all we can decently do for them, and we do it gladly. There is not a practicing physician in this room who has not patients of that kind that he cares for and loves, no matter if he never receives a cent. The care of this class is a psychological problem, as well, for they are sensitive, honest and proud. To help them, practically, is real charity—and yet they get, ordinarily, much less help than the scum. Another of our problems.

My experience in the care of the poor is based upon 37 years' practice in Central Illinois, at no time in a community of over 35,000 people. What observations I may make, therefore, are principally applicable to rural communities, not to large cities.

"Pauper work" may be done in different ways, according to the needs of the individual locality. It may be as well to speak first of preventive medicine. This kind of pauper work is no different from any other preventive work, except that it is much harder to accomplish. The pauper of my first class is apt to be defiant of all rules—and the worst of it is that he expects, and too often gets, supportive sympathy from the lay sob-sister and sob-brother in his community, and rails about his rights as an American citizen to anyone who will listen. And if one of his listeners happens to be running for office, so much the worse for the public. You and I *know* that certain degenerates ought to be sterilized, for the sake of the community which supports them. Yet the State of Illinois hasn't sand enough to put such a law on its books. You and I know that these children should be vaccinated for smallpox and diphtheria—yet the State of Illinois hasn't sand enough to pass a compulsory vaccination law. Because of this cowardice our State Government pays out millions of dollars a year which it shouldn't pay out, and it pays 100 cents on the dollar for everything it gets except what it gets from you and me. It pays you and me from nothing at all up to 50 per cent.—and taxes you and me *full* schedule to help pay for support of these same paupers. I make no apology for my oft-repeated statement that Illinois' method of handling its indigent poor is a joke—and the medical profession gets the worst of it. Draw your own conclusions, and look into the future and begin to think what you're going to do.

About 25 years ago we had a sudden outbreak of smallpox in the "slum district" of the town in which I lived. Many of you remember what that meant—farmers wouldn't come in to trade, townspeople wouldn't go out, and general hysterics everywhere. After a week or two of milling around one of the physicians there said he'd stop that epidemic if the city and county officials would pay him $25 a day for one month and back him up in whatever he ordered. They howled about the $25 a day for a month, whereupon he said he wasn't interested. So they agreed; he had had experience enough with county officials to insist on a written contract signed by them individually. Then he put those cases all into three houses in one block, and vaccinated—with the help of the rest of us—*everybody.* A few children, whose parents would not let them be vaccinated, were sent home from school, in spite of threats of lawsuits which didn't materialize. When some of the patients were convalescing they begin to break quarantine, thinking it was funny to do so. The city officials told them to stay in, but they wouldn't do it and the city "doubted its legal authority." They had a guard down there, but he didn't know his legal rights as a guard. Whereupon the doctor put one of his own gang down there as a guard with a shot gun and a box of shells, and promised the first fellow who went off the reservation a load of quail shot. That ended it. Smallpox was all gone in a month, and the doctor got his $750—and that $750 was the best

investment that town made that year. Are we doing any better today?

As I see it over the State, there are three pretty well defined plans for handling the pauper work of a township, or county, today.

First, the old plan where one man is given the work, for a fixed fee, usually on the basis of a competitive bid, at a ridiculously low figure. This work is well done or badly neglected according to the conscience of the man who is doing it. In the occasional township where there is only one doctor it is usually well done, because that doctor is paid a decent fee by the supervisor or he is busy doing something else—and no one can do the doctor's work but the doctor. Money talks—you can get better brick laying or corn plowing for decent wages than for half wages.

In another community of which I know, some of the members of the County Medical Society, about one-half of the total number, have formed what they call the County Academy of Medicine to do the pauper work. This County has a small hospital as part of its county farm equipment. Cases requiring hospitalization are sent there from the different townships and the latter pay proportionately. (Here, incidentally, is a fertile field for financial disagreements.) Five or six men compose a team, which works for two months, attending to all cases in the hospital, and the Academy of Medicine receives $1,800 a year, the same amount that was paid to the individual under the old single bid system. These men do not care for any patients except in the hospital, so the non-hospital cases must be attended in their homes by some township physician just the same. They are doing excellent work, no doubt of that. But they are doing about $10,000 worth of work a year for $1,800—and that is a mistake. They are also, perhaps unconsciously, getting plenty of patients among these who could pay something, and in that way they are encouraging medical beggars—that's another mistake, which could be largely rectified, however, by a real social worker who would decide whether or not John Jones was a pauper patient. It might put too many of the interesting cases into a comparatively few hands in counties where it is difficult for some men to attend during their turn—and I doubt if that will promote universal peace and goodwill forever. But for all that, there are many good points about this plan, especially in selected cases; and no one plan will fit all cases.

Two other counties of which I know—there may be many more, but I know of these—have a fee bill for all pauper work, these fees being approximately one-third of the ordinary, minimum regular fees. The patient may have any doctor that he and his supervisor may or can get. In one of these counties the fees are paid to each physician as he earns them; in the other, by their own agreement, the fees are paid to the treasurer of the County Society. The latter sees that all the members' local and State (and I think A. M. A.) dues are paid, and they have, as a society, money in the bank to do with as they please. This latter society, with the County Board of Supervisors, employ a social worker who, I am told, does not hesitate to say who "rates" county assistance and who does not. She is considered a good investment by both her employers, and ought to be. The right person in that place is, in my mind, very essential to the success of any of these plans.

Personally, I think the plan of the fractional fee basis will work the best of all in the long run—and this run is not going to be finished till Gabriel blows his horn—don't forget that. Whatever we do now will be a help or a hindrance to our sons and grandsons who follow in our footsteps. Choose whatever plan seems best to suit your individual community and carry it out—but *make that community pay, reasonably, for what you do.* Our profession has to live, pay its bills, pay its taxes, bear its share of everything—and we're glad to do it. But when the one thing we have to sell, to get money to do our share, is our services, why on earth should we *give* hours of our time for *nothing* to families for whom our civic authorities *pay* 100 cents on the dollar for everything from shoes to cigarettes? The one thing that I insist on, and always shall insist, is that medical services ought to be *paid for,* just the same as groceries and clothing; and that when a Board of Supervisors sits down to make up its yearly budget they put in a decent amount for those medical services. If it won't balance the first time that way, let them keep at it till it does balance. If anyone thinks that's unreasonable, just let *all* the doctors in any

county take a two weeks' vacation at the same time.

I have always done my full share of charity work and I always will. But I intend to administer my own charity—in my own way; and in some ways, among what we call the "worthy poor," no one will know anything about it. But I see no reason why the medical profession is obligated to *give* its services to the civic organization of a modern community when the members of that same profession are individually paying taxes of all kinds to support that same organization in 20th Century style. Think it over.

DISCUSSION

Dr. Elizabeth R. Miner, Macomb: I see no reason why the physician should only receive one-third of his price for the work he does, when the County Supervisor has to pay the merchants full price for all they furnish the county. We save lives. Is our work not as important as theirs?

TUBO-VALVULAR GASTROSTOMY*

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The indications for gastrostomy are numerous. Mechanical interference with deglutition from any cause is an indication for its performance. This is particularly manifest in malignancies of the oropharynx or esophagus, in strictures and in patients who carry on a pitiable existence by reason of gradual starvation occasioned by tuberculous involvement of the larynx which makes their life burdensome. Gastrostomy is the only form of relief which is offered to this class of patients for the dysphagia and other distress.

If we consider that the literature discloses more than thirty operative procedures for the performance of gastrostomy one must conclude that most surgeons are not entirely satisfied with the methods in vogue.

The two great pitfalls in gastrostomy as performed today are:

First, it is difficult to render the stomach water-tight and consequently egress of gastric contents often causes excoriations and cutaneous macerations which render the patient most uncomfortable.

Second, the difficulties commonly encountered in such operations as the Witzel, Stamm, Kader, etc., are well known. The most important one of these is that the channel through which the catheter passes is lined with serosa and, as is well known, serous surfaces tend to prompt union. Therefore, difficulty is experienced in keeping the passage patent.

The history of gastrostomy dates back to 1837, when Egelberg, a Norwegian military surgeon, advised its performance for cases of esophageal stricture and while Egelberg himself did not perform the operation, Bassow, in 1842, and Blondlot, in 1843, performed it on dogs.

Sedillot was the first to perform the operation on a human being, in 1849 and in 1853. From that time on the operation was extended and modified so that today we find ourselves with a number of procedures, all of which have the serious drawbacks to which I have alluded.

Depage, a French surgeon, in order to obviate the agglutination of the serous surfaces encountered in the Witzel and other procedures, formed a tube from the anterior wall of the stomach. This tube, being lined with mucous membrane, did not close and thus a distinct step in the right direction was taken.

But the other drawback, namely the leakage from the tube (in other words, the rendering of the stomach water-tight), was still to be overcome. This was made possible by Spivack's method which consists of forming a valve from the entire thickness of the stomach which automatically closes the opening at the base of the tube, thus rendering the stomach water-tight. (Fig. 1 C.)

These important obstacles, having been overcome, it seemed necessary to safeguard further against every possible source of failure, for Kraske and Anders saw peritonitis develop from leakage of gastric juice through the puncture holes made by the needle in classical gastrostomy.

Confronted, as every surgeon is, with the imperative demand for gastrostomy, I recently have studied the operation carefully. It has been my lot to experience a leakage from the point of junction between the tube made from the anterior wall of the stomach at the point where it joins the stomach wall.

Keeping in mind the tremendous advances made by tube formation (Fig. 1 A.) and more particularly by the valvular method of Spivack,

*From the Surgical Service, Cook County Hospital, Chicago.

it remained to reinforce the weakest point of the operative area, namely, where the tube joins the stomach. For this R. W. McNealy makes use of the omentum.

I felt that making use of the ligamentum falciforme hepatis as a protective layer over the suture line might answer the purpose. This I have carried out. (Fig. 1 B.) This ligament

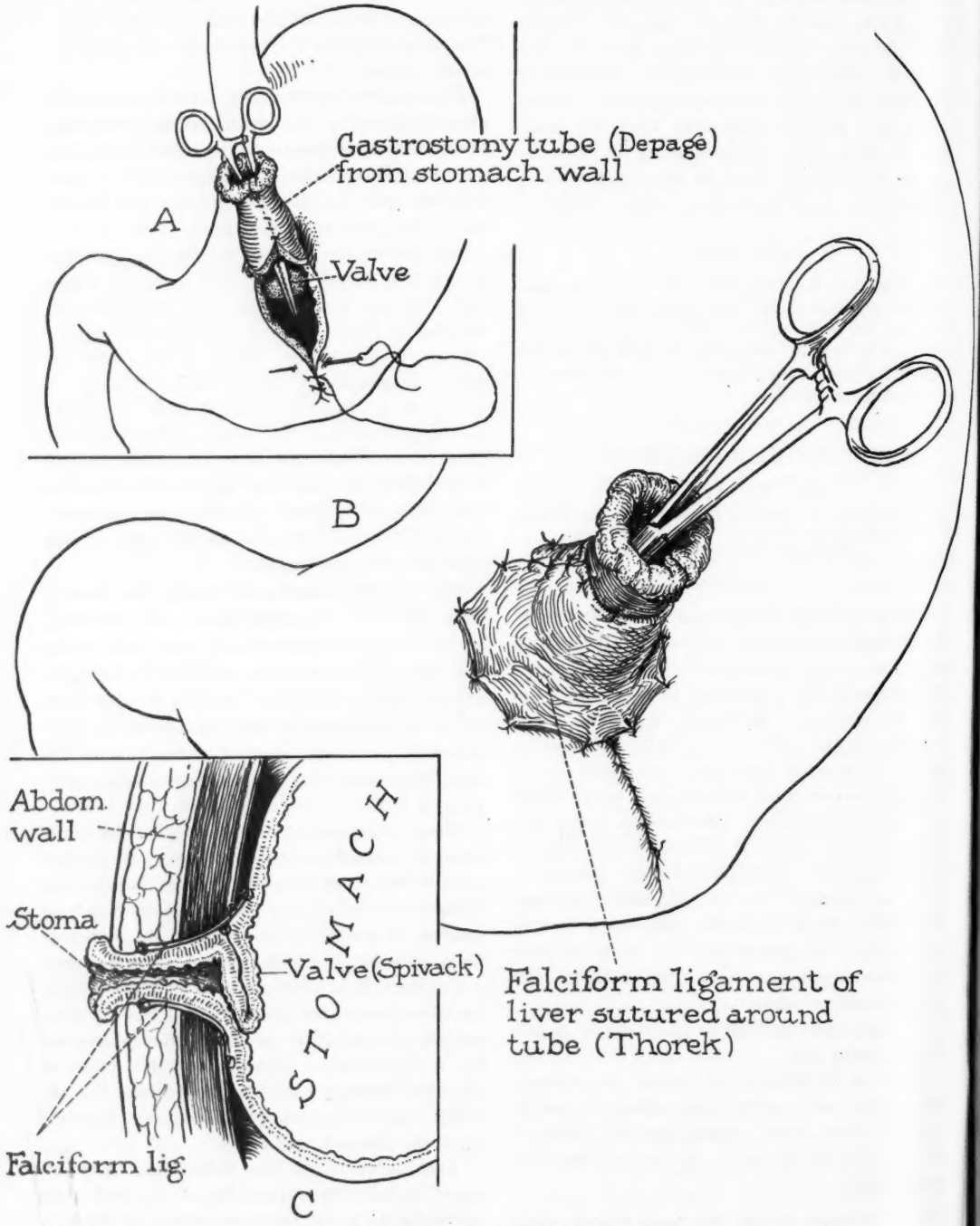

Fig. 1. Evolution of tubo-valvular gastrostomy.

being composed of two layers of peritoneum closely united, seemed to me ideal for the formation of a "protective collar" around the tube and suture line. The thus gained serous surfaces of the collar promptly agglutinate with the parietal peritoneum of the anterior abdominal wall and with the serosa on the anterior wall of the stomach. Additional security from leakage from the base is thus obtained and egress of gastric contents from the tracts made by the needle, to which I have previously alluded, is effectually prevented.

At first glance it might seem unjust to take a ligament of the liver and use it for the purpose of forming the "collar" described, but if we keep in mind that the falciform ligament, in the words of Gray "* * * give no support to the liver," it at once becomes apparent that it might be mustered into valuable service in this connection.

That such agglutination of the serous surfaces of the newly formed "falciform collar" with the anterior abdominal wall and the stomach does take place seems certain.

A patient, aged 73, who suffered from carcinoma of the tonsil with regional metastases into the oropharynx which caused him difficulty in swallowing, was referred to my service at the Cook County Hospital for the performance of gastrostomy. A tubo-valvular gastrostomy with "falciform collar" formation was done. Four days after the operation the patient developed hypostatic pneumonia and died. Necropsy performed by Professor Jaffe, four days after exitus, revealed no leakage.

There was complete agglutination of the "falciform collar" to the surrounding structures (along the suture line of the tube and to the anterior wall of the stomach as well as to the parietal peritoneum). Normal healing of the structures concerned.

The technical details of this procedure require careful consideration and meticulous regard for exactness. For the description of the formation of the tube and valve the reader is referred to an article by Spivack[1] and to Thorek's "Surgical Errors and Safeguards,"[2] pages 239-247.

After the tube and valve have been formed according to the technic described in the contributions referred to above, the "falciform collar" is formed by excising a sufficiently large portion of the ligamentum falciforme hepatis, which is immediately applied to the suture line of the tube and anterior stomach wall. It is attached in such a manner as to cover as much of the suture line as possible. Particular attention must be paid to covering the most vulnerable point, namely the junction of the base of the tube with the stomach. (Fig. 1 C.)

The suture material used should be very fine catgut, carried on small curved needles. The attachment is accomplished by interrupted sutures.

Where the falciform ligament is large and very mobile as is often the case, particularly in emaciated patients, I have swung it into position and sutured in place to vulnerable points without disconnecting it from its attachments.

The implantation of the tube into the abdominal wall is of umost importance and is carried out as follows:

1. Unite the parietal peritoneum with the serosa of the stomach posteriorly.

2. Repeat the same procedure anteriorly, picking up in the bite of the needle the serous surface of the "falciform collar."

3. Stitch the fascia of the rectus abdominis muscle to about the middle of the tube posteriorly. Repeat anteriorly.

4. Unite the end of the tube to the skin. This should be done with silk or Pagenstecher linen in such a manner that the everted mucous membrane forms at the completion of the operation a rosette representing the parietal stoma.

Conclusions

1. The indications for gastrostomy are numerous. It should receive greater application. It is strongly indicated in laryngeal tuberculosis with dysphagia where nutrition suffers.

2. The tubo-valvular method of gastrostomy marks a distinct advance in obviating the two great drawbacks innate to gastrostomy procedures performed hitherto (leakage and obliteration of passage).

3. A method is described by which a collar is formed from the ligamentum falciforme hepatis to further safeguard against the possibility of complications. (Leakage and its attendant evils.)

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DISEASES TRANSMISSIBLE FROM ANIMALS TO MAN OF MAJOR PUBLIC HEALTH IMPORTANCE*

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Self-accusation is one of the most irksome and disagreeable solutions of any problem that a human being may be called upon to solve. Every possible outside cause must be vindicated before a man will lay upon himself the blame for any loss, injury or shortcoming. Always he seeks to shift the responsibility for difficulties to other people or other things. Could evil or mischief have its source in a being created in the image and likeness of God? For a man to admit that he is an ambulatory incubator of diseases borders upon the preposterous.

Better to saddle the blame of sickness upon evil spirits! Better to believe that some witch has let loose the powers that produce fever! Better to believe that miasmatic air, swampy waters and malodorous garbage constitute the source and origin of communicable diseases. This, indeed, has been the history of epidemiological thought and theory.

At last, having exhausted in vain all other means of explanation, man has finally been compelled to recognize and admit that he himself is the dominant factor in producing the ailments which beset his life. Microorganisms are a factor in transmissible diseases but man is the principal incubator or soil upon which they grow. To be able to share this responsibility with lower animals may be the source of some satisfaction to the human ego. At any rate, this is the case in respect to certain diseases.

Fortunately, the general rule is that man does not share his diseases with the lower animals. Likewise, lower animals, as a general rule, do not share their diseases with man. The barriers between transmissible diseases of man and lower animals are broken over frequently enough, however, to make the subject a matter of some importance to public health.

It is possible for more than a score of diseases to be shifted in some degree back and forth between man and the lower animals. This discussion will be limited to those diseases which appear to have actually or potentially the greatest public health importance in Illinois at the present time. These are tuberculosis, rabies, undulant fever, tularemia and septic sore throat. The latter is closely associated with scarlet fever and, indeed, scarlet fever may very well be included in this list.

A consideration of these diseases will bring out one important relation which is frequently overlooked in public health programs. This is that the control of these diseases, so far as humans are concerned, depends to a considerable degree upon the close and intelligent cooperation of health officers and physicians with the veterinary profession. With a common purpose in view and a clear understanding of the common problems, solution will be made far easier than can otherwise be the case.

Tuberculosis. It is difficult to trace a particular case of tuberculosis and pin the origin down unequivocally to a bovine source. Circumstantial evidence has to be depended upon to a large degree. What seems to be highly incriminating evidence against a tuberculous cow was uncovered in Edgar County a few years ago.

Down there a federal veterinarian tested a herd. One cow, known as Black Lady, reacted. She was tagged and branded. The owner refused to believe that this cow was infected. He didn't want to risk the reputation of his herd by keeping her, however. Neither did he want to accept the loss of slaughter. Consequently, he traded Black Lady to his hired man, Kelly, in return for labor.

Kelly had seven children. The cow, he thought, would provide them with milk. The oldest child did not drink milk. The baby still nursed at its mother's breast. The other five drank milk from Black Lady and all five contracted tuberculosis. The other two escaped. The family physician made tests which showed that each of the five children was infected with the bovine type of tuberculosis. Every scrap of evidence indicated that the cow's milk was responsible for tuberculosis in these children.

This experience illustrates especially the teamwork between veterinarians and public health workers which is necessary to prevent such tragedies. Pasteurization is an effective way to prevent milk from carrying tuberculosis but pas-

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teurization is confined largely to city milk supplies. Furthermore, there are about 10,000 dealers in Illinois who handle raw or unpasteurized milk. During the last two years these dealers have cut prices and in that way have increased the volume of their trade. The integrity, skill and industry of veterinarians who are responsible for testing cattle is the only safeguard which stands between the consumers of this raw milk and the possibility of tuberculosis.

The influence of control measures applied to bovine tuberculosis can be measured with considerable accuracy. Bovine tuberculosis in humans is confined very largely to children under five years old. Twenty-five years ago, 6 per cent. of all deaths from tuberculosis in Illinois were among children in that age group. In 1930 only a trifle over 3 per cent. were among children under five. The actual number of deaths from tuberculosis among children under five years old has declined from about 450 to about 150 per year within a quarter of a century. Most of this decline has occurred during the last decade.

This indicates more than 300 fewer deaths per year in a population much bigger than that 25 years ago. Since for each death there remains 9 or 10 cases of the disease, the improvement includes the prevention of some 3,000 cases of childhood tuberculosis per year in Illinois. To what greater service to mankind could any man devote his time and energy?

A large percentage of abdominal tuberculosis in children under five years old results from the bovine infection. Thus, if control measures over bovine tuberculosis are effective there should be a significant decline in abdominal tuberculosis among these children. An examination of the statistics shows a very marked reduction. Twenty-five years ago abdominal tuberculosis accounted for 11 per cent. of the mortality from this disease among children under five years old. Ten years ago it accounted for 6 per cent. In 1930 abdominal tuberculosis accounted for only 3 per cent. of the mortality in this age group.

All of the evidence points unmistakably to success in controlling bovine tuberculosis to a large degree in Illinois. This could never have been achieved without the services of veterinarians who have practically eliminated tuberculosis from the herds of Illinois. Clean herds will not automatically remain free from tuberculosis, however.

This was illustrated a few weeks ago in Springfield. A mother of a four-year-old boy heard through neighborhood gossip that tuberculosis had been found among the cattle at the dairy from which she had bought raw milk for four years. Inquiry at the State veterinarian's office verified the rumor. A re-test had shown a number of reactors. That mother, although otherwise very intelligent, being a graduate of the University of Illinois, believed that raw milk contained some element of nutritional value not found in pasteurized milk which justified her taking the risk. She is now a convert to pasteurization but there are thousands of raw milk enthusiasts still at large in Illinois.

Since pasteurization will probably never become universal the protection of these people depends upon the integrity and diligence with which veterinarians, physicians and health officers do their work.

Rabies. Next to tuberculosis, rabies is the most important health problem common to veterinarians and public health workers in Illinois. This disease has resulted in a tremendous destruction of domestic stock and to no little loss of human life in Illinois during the last decade. Our laboratory records show that rabid infection was found in more than 3,000 animal heads examined in that period. Most of these were the heads of dogs which had bitten at least one person, frequently more. This is first hand evidence that at least 3,000 people were bitten by rabid dogs and therefore infected with rabies in Illinois within the last decade.

The anxiety and cost associated with efforts at saving these people from a disease that ends invariably in death can only be surmised. Making laboratory tests of 7,000 heads is no small item. The State Department of Public Health furnished the Pasteur treatment to about 2,000 people who were not able to pay for this necessary service. Even under these circumstances, 45 people died from rabies in Illinois during the last 10 years.

It is probable that the destruction of domestic livestock has been on a much larger scale than the damage done to humans on account of rabid dogs. Veterinarians are in much closer contact with the origin and spread of rabies than are the

public health authorities. They are able to find out more quickly when rabid dogs appear in a community.

It is helpful to know that stray, ownerless dogs who recognize no master's voice are chiefly responsible for the spread of rabies. Apparently the homeless curs constitute the reservoir of infection which perpetuates this disease. This was indicated by a careful study of the histories of several hundred cases by the State Department of Public Health. The stray mad dog bites nearly as many people as do dogs with established homes. In the great majority of cases the home dog that goes "mad" gets infected through the bite of an ownerless, stray dog.

Furthermore, early spring is the time of year when rabies is most prevalent. Popular opinion associates the peak prevalence of rabies with the late summer season frequently known as "dog days." For that reason, the disease often becomes epidemic before knowledge of a threatening situation results in appropriate action.

A program of rabies prevention will have a strong appeal to stock raisers and farmers because of the great economic losses involved. Pointing out that the greatest danger comes from stray dogs will stimulate greater alertness in controlling these roving creatures. Reminding country folk that rabies is primarily a spring-time infection will tend to scotch outbreaks of the disease before epidemics become general. Educational activities along these lines appropriately timed, would probably result in greater control over rabies than invoking the quarantine law. Health officers should not overlook the opportunity of enlisting the interest and cooperation of veterinarians in this problem. Working together, an epidemic can often be scotched before it gets a foothold.

Undulant Fever. Undulant fever is a problem quite similar in many respects to that of tuberculosis. Man gets the infection principally from cattle and swine. It is transmitted through milk or through the transfer of blood from infected animals to the blood stream of a human. Bang's disease and Traum's disease, as the infection is known in cattle and swine respectively, are probably more destructive of domestic animal life than tuberculosis. Undulant fever is not so widespread nor so fatal in humans as bovine tuberculosis has been.

On the other hand, undulant fever is apparently on the increase. A decade ago undulant fever was not recognized as a public health problem of consequence in the United States. A total of 1,385 cases were reported in 1930. Cases were reported in that year from every state in the Union. In 1925 only 24 cases were reported in the United States and these came mostly from Texas. Within five years undulant fever has leaped from obscurity into an important public health problem of nation-wide proportions.

In Illinois 5 cases of undulant fever were reported in 1927. These were the first ever reported in this State. In 1929 the number jumped to 37 and in 1930 to 33. Last year 123 cases were reported.

It is probable that undulant fever existed before it was recognized as a specific infection. On the other hand, there is general agreement that the disease is on the increase. What probabilities are hidden behind the curtain of the future no one can say. It is possible that undulant fever may develop into a deadly plague commensurate with what tuberculosis has been in the past. The development of this possibility can be forestalled by the suppression of the infection in livestock before it has become a general threat to humanity. The task before the veterinarian and public health workers can therefore be measured in terms no less ambitious than of preventing a major human plague.

The history of all infections which have developed into great human plagues is that they have traveled in great epidemic waves. The black death of the Middle centuries reached world-wide proportions and then subsided to lesser magnitude. Malaria caused more than 12,000,000 cases of sickness in Russia shortly after the World War. Leprosy at one time was a stupendous problem. Influenza swept the world in 1918 in a periodic wave of great magnitude. Tuberculosis appears to have reached a peak that had already begun to recede when the campaign against that disease became effective. It may be that undulant fever is on the upward trend in a threat of becoming parallel to these great plagues.

Teamwork between the veterinarians and public health workers is more essential in connection with undulant fever than with tuberculosis. Pasteurization does not destroy the undulant fever

organism as easily as it does the tubercle bacillus. A large number of humans are exposed to undulant fever when infected animals are slaughtered. This risk is not involved in tuberculosis. Suppression of Bang's disease and Traum's disease in livestock is therefore the most promising point of attack. Detecting and eliminating these infections in cattle and swine not only removes the danger to humans but it leads to large economic gains for herd owners.

The seriousness of the undulant fever situation is indicated by the fact that the State Department of Public Health has organized a State Undulant Fever Committee in Illinois. On it are represented the various interests associated with the problem. Several sub-committees who represent special interests such as producers, manufacturers, stock raisers, veterinarians and the medical profession have been appointed to study undulant fever from their particular points of view. A practicable program which will result in the control and suppression of undulant fever is expected to come out of the work of these committees.

Septic Sore Throat. This disease is of considerable importance although in recent years epidemics have been less frequent and more limited in magnitude than in the days before pasteurization became general. From 1924 to 1930, inclusive, no less than 30 milk borne epidemics involving 5,256 cases and 84 deaths were reported in the United States and Canada. Of these, 16 occurred during 1929 and 1930. The immediate sources of infection in five of these outbreaks, which accounted for 1,145 cases and 9 deaths, were found to be cows with infected udders. While it appears that the cows must first be infected by a human in order to become a source of epidemic danger to man, the importance of the role played by the cows is in no wise minimized.

Based upon extensive and unusually well developed epidemiological evidence, Scamman concludes that:

"It is our opinion that the present weight of evidence shows that milk-borne outbreaks of septic sore throat and of scarlet fever are generally the result of an infection of one or more cows by an individual carrying hemolytic streptococci of the human type. As a result of this the milk is already infected when it leaves the cow and the outbreak is due to this infection rather than to contamination of milk in the interval between its leaving the cow and its use by the consumer. With these ideas in mind, our recent investigations of these milk-borne outbreaks have been carried out with the aim of finding an infected cow or cows and also of locating the human source of the cow's infection. It is not always possible to locate both the human and the bovine source of infection, and it is almost too much to expect that both of these should be found in every epidemic. Both the person and the cow may show positive cultures for only a brief period, which may well have passed before an investigation is undertaken."

To control this disease, therefore, requires the most harmonious cooperation between health officials, physicians and veterinarians. The health officer must insist upon pasteurization wherever practicable. The physicians should designate on case reports the source of milk on all notifications of throat or respiratory diseases so that the health officer might grow suspicious when multiple cases which take milk from a common source begin to come in. The veterinarian should preach to producers the importance of being always on the alert for any abnormal udder conditions and to eliminate milk from such cows immediately rather than risk the ruin of his market by having an epidemic traced to his herd. Some of the worst known epidemics of septic sore throat have been spread through milk from dairies which have enjoyed unblemished reputations for high sanitary standards over extended periods.

There have been severe outbreaks of septic sore throat in Illinois, an epidemic involving some 10,000 cases having occurred in Chicago in 1912. With the extension of milk pasteurization, outbreaks have become increasingly rare, however. The only recent outbreak of septic sore throat in this State which cast suspicion upon milk occurred late in 1929 at Tonica in LaSalle County. There were about 100 cases with 2 deaths. While the epidemiological investigations gave no clear-cut results the weight of evidence pointed toward contaminated milk but specimens for laboratory examinations were taken too late to locate the offending source whether cow or human.

Simultaneously with the Tonica outbreak, however, at Baraboo, Wisconsin, a cow with an infected udder was designated as the source of an epidemic which resulted in 250 cases and 6 deaths.

Tularemia. Like undulant fever, tularemia has been recognized in Illinois, and indeed in

the United States, only recently as a public health problem. Only 9 and 36 cases, respectively, were reported in Illinois during 1928 and 1929 but the figure jumped to 137 in 1930 and 124 in 1931. While quail, opossum, squirrels, woodchuck, coyote, muskrat and wild rat have been known to be infected with and transmit tularemia, the cotton-tail rabbit is the great reservoir and common source of the disease for man.

SUMMARY

Among the diseases discussed, knowledge concerning three is sufficient to bring the combat into the open. Consequently, an efficient technique of control and prevention has developed to the point where great success has attended the efforts expended. These are tuberculosis, rabies and septic sore throat.

Undulant fever presents a complex problem which may be in process of development toward major importance. Rigid application of such things as pasteurization and the promotion of control of the corresponding diseases among stock, promises a degree of successful opposition at present. In the meantime, research should lead to a better understanding of the disease and more practical methods of control than now prevail.

Interest taken in the problem of tularemia by such agencies as the Isaak Walton League inspires hope that hunters and others who are exposed will be kept informed of risks and the means of control and prevention. The problem of prevention and control is chiefly one of public instruction.

All of these diseases involve human health and economics in a way different from the ordinary ills of man. The close and intelligent co-operation of the veterinary, medical and public health officials may be expected to result in controlling all of these diseases to the same degree that has marked the course of human tuberculosis of bovine origin.

DISCUSSION

Dr. Robert Graham, Urbana: I want to take this opportunity to express my appreciation of the splendid viewpoint of the importance, from a public health standpoint, of diseases communicable from animals to man. My contact with animal pathology problems enables me to have an appreciation of the statements made by the essayist regarding the close relationship between human and animal pathology, and the problems of animal and human health incident thereto. If there is any one field more than another which should command our thought as we go about our work each day in our rsespective duties, it should be this important field. Illinois and other sections of the middlewest produce and will continue to produce animal foodstuff. The problems of hygiene and the relation of different contagions transmissible from animal to man may become intensified rather than decreased. The development since the time of Jenner and significant findings of Pasteur, which mark the beginning of the science of bacteriology, indicate that the greatest variation in certain pathologic processes in man and animal lies in the patient. The advances made in our knowledge to date are but a gesture of what may remain unknown, and we should keep in mind that the disease of animals may involve new or unrecognized public health problems, rather than to content ourselves with the view that all is known.

With reference to the work of the veterinarian in the field of public health there is a growing feeling among the leading physicians and the public with reference to its value and the need of more general recognition of accomplishments to date. At the present time the livestock industry of this country is threatened with a disease of cattle, sheep and swine communicable to man, viz., the foot and mouth disease, and its successful suppression at this time in California rests in the hands of federal veterinarians, the animal health officers of the nation. Foot and mouth disease has more than a public health aspect. If the plague should gain entrance to Illinois, with its two large market centers, public health officer and citizens of the state would feel the effects of this malady in one form or another. Therefore animal health is a problem which affects directly and indirectly the health and happiness of our people.

Notwithstanding commendable progress, we have not, it seems to me, developed to the fullest in every locality the type of cooperation that is available between physicians, veterinarians and public health officers. I recall my experience in the army when veterinarians, physicians and sanitarians worked together on the problems of health in man and animal. The splendid experience at the autopsy table in the laboratory, in times of emergency, proved helpful to physician, veterinarian and sanitarian in the solution of different problems.

From an educational angle, veterinary medicine, as well as human medicine, has had a gradual growth and I am glad to report to this section of your association that in the last year, veterinary education has taken a definite advanced step by increasing its curriculum to a five and six year course. The objective in training veterinarians is the same as that in training physicians. When the goal is reached, and it will be reached, we will better appreciate the qualifications of the trained veterinarian in the field of milk and meat inspection, rabies, tularemia, tuberculosis and undulant fever control. In fact, these problems are the responsibility of the animal pathologist and the trained veterinary sanitarian.

It has been my good fortune to have contacts with several city boards of health which employ veterinarians

and to note the cooperation and assistance rendered for the mutual public benefit. I would like to commend this arrangement to every city board of health in Illinois. Such an arrangement is the theme of Dr. Hall's talk, and its application is our responsibility to our respective communities.

We may believe, from our own viewpoint, that the problems of disease control, particularly with reference to the animal host, are solved. There is ample opportunity for improvement in application of known facts and finding new ideas. I can not help mentioning the splendid work done by one of your coworkers, Dr. Kirkwood of Lawrenceville, in the field of comparative pathology. It stands out prominently in the field of comparative pathology. I can remember the time, not many years ago, when physicians would come to our office and ask for information concerning tularemia, and we would refer them to Dr. Tom Kirkwood. In connection with his observations dealing with infected rabbits, confirmed many times by veterinarians and physicians, it might be well to mention that a comparable infection has since been found in sheep, and that there has come to our attention a case of tularemia in which the patient, who was a veterinarian, had been treating an undiagnosed sheep disease. The disease which developed in this veterinarian was proved by repeated serologic tests to be tularemia.

This incident serves to emphasize an important thought, i. e., that after all, the greatest difference in some of our bacterial infections exists in the patients themselves.

I would like to see the field of animal-human disease studied carefully by every health officer. Dr. Hall, during the past year, has helped many veterinarians to obtain a constructive viewpoint and assist in extending this viewpoint in different communities, and I feel that as public health officers you should be more and more interested in the field of comparative pathology and assist at every opportunity in obtaining clinical data that may help to remove some of the obscure problems which we are called upon to face from time to time.

I might add in conclusion that in our animal pathology work at the University, since July 1 of last year, there has been in the neighborhood of twenty-six thousand specimens examined and forty per cent of these have had a bearing upon public health. Stated in another way, from a veterinarians' viewpoint or looking at it strictly from a laboratory angle, some fourteen thousand specimens, which have a public health aspect, have been submitted to the animal pathology laboratory of the University.

No one can deny the importance of closer cooperation between veterinarians and public health officers, and as time goes on we shall doubtless appreciate more fully the splendid work of Dr. Hall on this subject.

There is an opportunity among physicians and among veterinarians for self improvement in this field. Last week a farmer came into the laboratory with a dog for diagnosis. The clinical picture was rabies. He came from a locality in which the veterinarians and physicians may not be particularly familiar with this disease. The history of the case was presented; the owner had made repeated efforts to remove a bone from the throat of his rabid dog. He was not cautioned by his veterinarian or physician regarding the danger. They had, however, informed him that the abrasions on his hands might be an avenue of infection from contaminated saliva. His hands were examined and many abrasions were found on the backs. It is true that the abrasions were not deep cuts, but the epidermis was broken. This is an example of neglect and unguarded teaching. From a public health standpoint it is a distinct problem of education that must be extended earnestly and never ending.

The fund of information in rabies prophylaxis is ample. The problem is the dissemination of the information. Dr. Hall's spendid presentation will be valuable in the records of the association as a source of information and teaching. It is constructive, enlightening, and helpful to us in our appraisal of many important problems of public health.

Dr. Tom Kirkwood, Lawrenceville: Dr. Hall has given us a splendid paper on the various diseases of animals which may be transmitted to man. Dr. Graham, in his discussion, has mentioned the various diseases of this type which we are most likely to see, and Dr. Hall has emphasized the importance of these infections to the human family.

Dr. Graham has also called attention to the improvement in the veterinary service which we are getting, and points out the effect of this improvement on the public health. I cannot help but notice in the last few years that the veterinary surgeons with whom we come in contact, have a keéner appreciation of their obligations to the community from the standpoint of public health. We have one in our community who is very much up on his toes. He knows his business. It is surprising how well he keeps tab on the various herds in our vicinity. He recently called me into his office and showed me a number of agglutination tests which he was making on suspected herds. He appreciates the public health value of his efforts to keep our herds clean. He should be given due credit by the community for his work. He is one of the important cogs in the organization which is attempting to eradicate those animal diseases which may be transmitted from animal to man.

During the last five years I have had undulant fever aggutination tests made in every case of continued fever which has come under my observation. In that time four cases were reported as positive. It is difficult to estimate the number of cases which occur in our county, but I have averaged about one per year. At the same time I have seen from two to four cases of tularemia a year. One of these tularemia cases was caused by infection from a fox-squirrel and another by infection from an opossum. Last summer Dr. C. G. Stoll of Summer saw a case of tularemia following a tick

bite. This was the first case from that source reported in Illinois.

Tuberculous adenitis has become rare in our county since our dairy herds have been tested and cleaned up. Prior to five years ago we saw a good many infections of this type. Careful testing of our herds and pasteurization of at least eighty per cent. of our milk has made life much safer for our children.

I have enjoyed Dr. Hall's paper and wish that every doctor in the state could have an opportunity to hear it. This paper, along with those of Dr. Graham, and Drs. Arnold and McDaniels, gives a very comprehensive review of this type of diseases and if every practitioner were familiar with the facts presented, it would help materially in reducing the incidence of those diseases which we acquire from animals. Thank you.

Dr. D. F. Luckey, V. S., Springfield: For over thirty years I have been actively engaged in the control of animal diseases and during all that time I have been very much interested in the overlapping of this work with the protection of the human family, so that a program of this kind is so interesting and instructive to me that I could hardly refrain from taking the floor for just a little while.

Dr. Andy Hall has been kind enough to attend a number of our veterinary meetings and I want to assure you that he has met there a very responsive chord, and he is very much liked by the veterinarians because he has been sociable with us.

In this long experience of mine so many things have been encountered of interest that I would not undertake to discuss many of them, but there are a few little points which, I think, have not been discussed very much in the medical profession. For instance, the per cent. of people and animals which developed rabies after having been bitten. I have heard the rumor that five per cent, of people and animals bitten developed rabies. I know in live stock, it appears that every animal, a hundred per cent. that is bitten, develops rabies. In one case, a farmer had about one hundred and twenty-five sheep confined in a barn where they couldn't get away. One of these stray rabid dogs came along, got in there in some way and, during the night, he killed three sheep, and gnawed their noses up to their eyes. That took a good deal of his time. But during the night he bit seventy-two sheep and every sheep was bitten on the upper lip and the lip was torn. And beginning on the nineteenth day every single sheep that had a scar on its lip developed rabies. That same man once had two pigs and three lambs in a little shed. A rabid dog got in among them and presumably bit all five of the animals and they all died. And so on down the line. I have had that experience many times. It appears that a hundred per cent. of the animals that are bitten develop rabies if they are actually inoculated. That doesn't apply in the human family where the bite may be through the clothing and probably the bite does not actually break the skin. But I think that every animal, where the virus of the rabies gets into the blood stream, will develop rabies.

Another thing that has never seemed clear in the minds of the people is the variable period of incubation of rabies. We find where large bunches of cattle, sheep or other animals have been bitten by rabid dogs that the first symptoms appear, in the most acute cases, on the nineteenth day. The largest number of cases will develop between the nineteenth and twenty-eighth day after the animals are bitten, and then an occasional case will develop later. In one case cattle were bitten. The main losses were in May. Another steer developed it in August. Another steer in this bunch developed the next February. So, the point of importance is this, that when a lot of dogs are bitten in this town and the health and city authorities take steps to institute a brief quarantine, the disease dies out, and eight months later some dog leaves this town and journeys, we sometimes find as much as a hundred miles, straying through the country. That is the stray dog without a master. There is a long period of incubation. I think we have plenty of records of dogs and horses that have gone a year. It is important to take that into consideration and it is also important to take into consideration that a certain per cent. of dogs that develop rabies, no matter how good a home they have, will get up and leave home and just travel, just keep going, and, therefore, a big outbreak of rabies that we hear about where people are bitten by a strange dog, a dog that in his delirium travels and goes sometimes as far as a hundred miles.

A point of great satisfaction and interest to me, and I am glad to tell you this, is that as I started over to Champaign one Saturday not long ago I stopped to call upon a veterinarian in Decatur and in our visit he remarked that during the year 1931 several dogs in the community began to show strange symptoms, and that whenever he heard of such a dog he would get it and put it in a certain room and lock it up. During the year nine of these dogs developed rabies in that veterinarian's charge and he killed them. One of those dogs may have journeyed here to Springfield and met a lot of people and bit them. Another may have gone to Champaign and another to some other surrounding town, and another one out through the country. These veterinarians are performing that service for the public good. Every veterinarian in the state is doing that. And I want to say that the reason that I appreciate Dr. Andy Hall so much is that he is beginning to realize that nothing pleases the veterinary profession more than to have the public feel strongly that they are actually vitally and actively interested in the preservation of public health. As the secretary of the Illinois State Veterinary Association, I can pledge you without any reservation that you will find every veterinarian in the state ready and glad to work with the health authorities in suppressing the various diseases of animals that are communicable to man. I want to say that many years ago, before very much interest was taken in the question of animal diseases communicable to man, we were stamping out tuberculosis, eradicating tuberculosis. Thirty-two years ago I commenced myself and in the process I have had to do a lot by way of educating the public and bringing to them a knowl-

edge of the principles regarding the spread of disease.

So I can assure you who are interested in public health matters that the veterinary profession feels complimented to receive the recognition that Dr. Hall has given us, but we are always ready to do our part.

Dr. C. R. Smith, Decatur: In Decatur we have two representatives from the veterinary association in our local health council and the veterinarians in Decatur report to the health department diseases of animals that have any relation to human disease. I appreciate the fact that the work they have done in the past on the tuberculin test of cattle has helped us a lot in our work in the tuberculin test of high school students, which we did just about a month ago. The people were educated to the value of the tuberculin test and we had very little trouble in getting practically ninety per cent. of the high school children tested for tuberculosis.

Hon. Clarence Griggs, Ottawa: I think there is no better work Dr. Hall is doing than sending these men around seeking the opportunity to educate the laymen on these questions. Dr. Dana Palmer, one of Dr. Hall's assistants, gave a very interesting and instructive address. I think that is a splendid idea to educate the laymen. They don't get this except in just that way.

(Nothing said by Dr. Hall in closing.)

SURGERY, X-RAY AND RADIUM IN THE TREATMENT OF CANCER*

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The literature on all aspects of the cancer problem is so very voluminous that one who begins to delve into it is soon brought to a very humble state of mind when regarding our present method of combating malignant neoplasms.

Cancer is mentioned in the early Papyrus of Ebers fifteen hundred years before Christ. Hippocrates brought diathermy into play when he burnt out a carcinoma of the neck in four hundred B. C. Celsus treated carcinoma of the breast by surgical excision, advising against removal of the pectoralis major in thirty B. C. and the more or less successful treatment of cancer by excision, ligation of vessels and cautery was carried on from that time until the seventeenth century, when chemical conceptions of its cause held sway and gave way to treatment by caustics and alkalies, internally and externally.

We have been told that carcinoma is increasing at the present time. We *do* know that the death rate varies from one hundred to one hundred and fifty per one hundred thousand; but it is very likely that any increase of cancer mortality is more apparent than real. It is questionable whether deaths from carcinoma have increased at a greater rate than the number of people living into the cancer age, that is to say, the increase of human longevity have brought more people into those decades in which malignant tumors are most common.

The only means of combating carcinoma in the individual remains, radical surgical removal of the malignant mass with either the hot or the cold knife, and ionization and destruction of the tumor substance by the means of x-ray or radium. But today it is not possible to compare with any degree of accuracy which of these methods is the best. A study of statistics will tell us which is probably the best means of therapy to employ against carcinoma in a given anatomical location, but before we are entitled to say, that this is best, or that is best, we should consider the results of each procedure in the same type of cancer, namely, after determining its relative degree of malignancy, the degree of lymphatic involvement together with its location within the body, and possibly, an attempt made to determine its radio-sensitivity co-efficient. It would seem therefore, that a comparison of results can only be made when malignancies of the same class and same degree of metastases can be compared.

Broders of Rochester, has taken a step in this direction. He has classified malignancies into grades one, two, three and four. Grade one is that which is the most differentiated, consequently the least malignant, and offering the best prognosis. Grade four is at the other extreme, with grades two and three intermediate in degrees of malignancies.

Ward and Farrar of The Women's Hospital of New York City, have presented a series of about 350 cases of cancer of the female genitalia, over a period of ten years and for which they have arranged a classification, but their classification is based on the extension of the disease and the involvement of the parts. Their end results consider treatment with radium only, and range in the neighborhood of 25 per cent. of five year cures. Their classes one and two being carcinoma of the cervix only and showing 57 per cent. of five year cures and three and four, in which the disease has advanced beyond the cervix and for which they claim 17 per cent. cures.

Of a total of sixty authors, writing of 20,400

*Prepared for the cancer committee and read before Staff Meeting Ravenswood Hospital.

cases of carcinoma in the past three years, forty or 66⅔ per cent., differentiated their cases into those best suited to surgery and those best suited to radiation according to body location. Thus creating a tendency to recommend treatment (that is—surgery, x-ray or radium) according to where the cancer is located. The consensus of opinion suggests that the best individual treatment occurs when the cellular characteristics, the probable irradiation response and the chance for cure by excision methods are all considered. In practically all cases, excision methods used along with irradiation increase the chances of a cure. The hope of an ultimate cure in an individual case requires that the treatment must be of sufficient scope to reach beyond the furthest extension of the disease.

There is no reasonable doubt in the light of our present knowledge that the surgical removal by wide excision with the scalpel is the most exact and most dependable of all single agents for the destruction of carcinoma. But because of the numerous lymph vessels remaining at the close of an operation done with the scalpel, which may carry cancer cells into healthy tissue, it also has fallen far short of what otherwise might reasonably be expected of it.

The majority of the writers referred to above, seem to feel that in general, endodermic carcinoma, namely those of the stomach, intestines, uterus, ovaries and kidneys give better end results when treated by mass excision. On the other hand, exodermic carcinoma, epitheloma of the skin, mouth, pharynx, larynx, vagina, cervix, etc., are treated by physical agents—irradiation —more successfully than with the knife. A combination of surgery and irradiation being the best for the treatment of lymphatic metastases.

From a study of this literature it seems evident that a systematized mode of attack yields the best results keeping the system elastic enough to change when warranted by improved results. In early lesions in Broders' class one and two, operation, radium or x-ray are optional. Equal results are obtained. In operable cases of classification three and four operation, with irradiation before or after, or both seems advisable. In cancer of the female genitalia it is self evident that the mortality with an extensive Wertheim operation is considerable—from irradiation it is negligible. The ideal method would seem to be a close co-operative study of each individual case, between the attending physician, the pathologist and the radiologist, and a co-operative checkup on all three by a followup department. The irradiation part of the treatment which seems to be productive of the best results (I'll not attempt to settle the quarrel amongst the surgeons as to the relative merits of the scalpel or the cautery or the so-called radio-knife) seems to be, in this country and at the present time, an intensive broken dose method of from 2,400 to 6,000 milligram hours with sufficient filtration to provide plenty of hard well filtered gamma radiation. This is accomplished by using the wall of the applicator which is .5 millimeters of silver and one millimeter of brass in the uterus, and up to two millimeters of lead with 2 centimeters of rubber in the vagina. Much of the treatment can be carried out in three weeks, in a series of eight or more applications followed by high voltage x-ray through four large portals. Only one course of radium is given, unless there is demonstrable activity in the treated field after three months. This much radiation presupposes that the patients' general condition is good, with a red count of over three and one-half million. A count below three and a half million or below 50% of hemoglobin is best treated by a preliminary transfusion. If the patient's condition is poor and the growth is massive, with wide metastases, it is best to abandon any systematized technic, but to carry the treatment forward as conditions warrant.

In regard to reported cases of stimulation of cancer growth by x-ray or radium. This phenomenon is usually reported in those clinically early cases succumbing to a widespread metastasis even after successful healing of the primary lesion, this probably being the result of the existence of metastases even before the treatment was begun and such results being erroneously quoted as an example of gross stimulation by irradiation. Canti in his film shows the action of irradiation on cancer cells being growth restraint and cell destruction by ionization and phagocytosis.

Of late, considerable attention has been called to so-called "radio sensitivity" of carcinoma growths. Every radiologist has had the experience of seeing some tumors respond more readily to a given dose of x-rays than others. To state the matter simply, it merely means that immature cells and cells in an active state of

division are more sensitive to irradiation than cells that have already acquired adult morphologic and physiologic characteristics. It has been shown, that cells in an active state of division are seven times more sensitive to irradiation than resting cells. Thus the ordinary cancer cell requires from four to six times a skin erythema dose for its destruction. In general, the younger the cell the more susceptible to the rays.

In conclusion it would appear that the experience of these 20,400 cases of cancer of all kinds and all grades have led these sixty writers to feel that the best results are obtainable by First: following a given system of attack. Second: By classifying the tumors from their location, their pathogenicity and their degree of involvement. Third: By estimating the probable outcome from treatment with surgery, with radium, with x-ray or with a combination of all three. Four: By the close co-operation of a follow-up department and Fifth: By the closest co-operation and harmonious activity of the surgeon, the pathologist and the radiologist all working together.

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LOCAL ANESTHESIA AS AN AID IN THE REDUCTION OF FRACTURES AND DISLOCATIONS*

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Most American text-books on the treatment of fractures and dislocations give little space or enlightenment to the use of local anesthesia. Brief references are made to its employment and the practice while not condemned is not enthusiastically endorsed. Scudder[1] states "that rigid and strictly standardized methods of fracture treatment are undesirable and never can be developed." Speed[2] admonishes "that fracture treatment has not kept pace with the brilliant advance in many divisions of medical science," and emphasizes the deficiency in the knowledge of practical fracture treatment possessed by a large majority of newly graduated medical students. The subject of the neglect of fractures and the necessity for attention to them and to the training of men in that field is being seriously considered by the medical societies of the world.

Standardization of training in the treatment of fractures should include anesthesia as a very important sub-division. Local or regional anesthesia should be especially stressed for here is an adjunct that exceeds its primary object of merciful analgesia.

The merits of local anesthesia are based on two great factors, first as a safety measure for the patient and second as a very valuable adjunct in the management of the fracture itself.

The direct and indirect dangers attending the administration of the various general anesthetic agents are well known and need not be discussed here. Surely an anesthetic agent that permits gentle yet efficient manipulations of fractured or dislodged bones without the need of wide trespassing upon brain or uninvolved parts is an adjunct agent greatly to be desired. We have in procaine hydrochloride such an agent. We wish to present our method of inducing combined analgesia and muscular relaxation.

Depending only upon the site of trauma, we employ one or combine two of the following methods of administering local anesthesia in all types of fractures and dislocations.

(a) Regional field and nerve blocking.

Stock solution of ¾% procaine hydrochloride to which four to six minims of one to one thousand solution of epinephrine is added to each one hundred cubic centimeters of procaine. Dosage ten to one hundred and fifty cubic centimeters.

Lesion—simple or compound fractures of skull; spine; forearm; wrist; hands; below the knee; ankle; and foot.

(b) Intramuscular injections.

Same stock solution of ¾% procaine.

Dosage, combine injections with (a), using ten to thirty cubic centimeters into the bellies of each muscle.

Lesion—fractures and dislocations of the upper and lower extremities.

(c) Brachial plexus block.

Same stock solution of ¾% procaine.

Dosage—30 cubic centimeters.

Lesion — Fractures and dislocations of the upper extremity.

(d) Low intraspinal block.

*Read before Section on Surgery, Illinois State Medical Society, Springfield, May 18, 1932.

Procaine hydrochloride crystals dissolved in spinal fluid.

Dosage—limited to one milligram for each pound body weight.

Lesion—Fractures and dislocations of pelvis and lower extremity.

We have found local anesthesia adaptable to all types of fractures and dislocations. We have not had to resort to general anesthesia in over two hundred consecutive cases of fractures and dislocations. The female patients have been excellent subjects. The child even below the age of reasoning has been easily managed and the insane patients have reacted surprisingly well. The only limitation for local anesthesia is the control of aseptic conditions—the necessity for surgical cleanliness at the site of injections of sterile procaine solution.

Fig. 1 Fig. 2 Fig. 3

Figures 1, 2 and 3 demonstrate intramuscular injections for the reductions of fractures.

Time will not permit the detailed treatment of fractures and dislocations. Each bone and joint carries its individual problems based on site of trauma. Generally it may be stated that the reduction of fractures is a mechanical problem and that the restoration of good alignment and apposition of the fragments is largely dependent upon the control of muscular relaxation. A rational reduction must be based on fracture site and the all important associated mechanics of muscular contraction.

This may be attained with surprising ease by the intramuscular injection of procaine into the bellies of the contracted muscles combined with a regional blocking of the sensory nerves. We do not favor injection at site of fracture into the so-called "fracture hematoma." The contused or broken skin may not be safely cleansed and the introduction of the anesthetic solution at the fracture ends may convert a simple fracture into a compound one. We inject for analgesia a transverse block well above the line of fracture, at least five centimeters. This injection crosses the path of the regional sensory nerves. Individual identification of nerve is not necessary. We consider a diffuse infiltration to be safer than "spearing" and the injection of individual nerves. Intra-muscular injections are then made into the muscles involved in the fracture, a careful survey having first established the muscle pull on both the upper and the lower fragments. The patient may then be taken to the flouroscopic room, the five or ten minutes intervening being sufficient for the establishment of analgesia and relaxation. There is no pain and the analgesia persists two to four hours after the reduction. Most important is the sustained relaxation of muscles, the intra-muscular injections having blocked the reception of nerve stimuli by acting on the motor end plates. In fractures with stubbornly resisting fragments, this relaxation may be controlled indefinitely by repeating the intra-muscular injections. However, the repeated injections are rarely needed as

the fixation and traction splints usually control the reduction.

For major fractures and dislocations of the upper extremity, we favor brachial anesthesia. We employ the supra-clavicular route of Kulenkampff.[3] This method requires an exact technique that may not be attained in children or those unable to co-operate. Fortunately we have in the regional field block and intra-muscular injections a method adaptable to all patients.

Intra-spinal block is the method of choice for fractures and dislocations of pelvis and femur and high leg fractures. Below the knee, the regional field block and intra-muscular injections are indicated as the muscles and contractures are readily reached.

The need for elaborate and complex mechanical devices for traction and fixation is greatly reduced. Usually a light moulded skin plaster cast will suffice for the upper extremities. A reinforced body cast may be necessary for difficult fractures of the humerus. In the major fractures of the lower extremity, we favor the Thomas splint and the Balkan frame and employ skeletal traction if overriding persists. The relaxation following intra-spinal block or the intra-muscular injections has lessened the need for traction; skin fixation straps with light traction are usually sufficient. The problem becomes one of careful maintenance of a well reduced fracture. The patient has witnessed the reduction, often has aided remarkably by exerting counter traction and shifting position when necessary. Awake and alert he now continues an able interested assistant.

Contrast this to general anesthesia. The ether and gas anesthesia give only transitory relaxation; casts, splints, and traction must be depended upon to maintain the hurried reduction often through post anesthetic delirium and the indefinite period of overpowering muscular effort by traction fatigue.

The above methods of local anesthesia are indicated in the difficult fracture and dislocation problem, such as compound and old ununited fractures and old unreduced dislocations requiring open operation. We have noted a greater percentage of closed reductions in our series of fractures since discarding the use of general anesthesia as the sustained relaxation of the muscles involved and the very important aid rendered by the co-operation of the patient increase the opportunities for good reduction.

Series.

Our series include:

Fracture of skull:		Fracture of Tibia:	
Simple	6	Simple	14
Compound	5	Compound	8
Fracture of Spine	8	Old ununited	6
Fracture of Pelvis	12	Fracture of Fibula:	
Fracture of Scapula	1	Simple	11
Fracture of Humerus:		Compound	3
Simple	12	Dislocation of:	
Compound	6	Inferior Maxilla old irreducible	2
Old ununited	4	Dislocation of:	
Fracture of Ulna:		Acromioclavicular Joint, recurrent	6
Simple	14	Sterno-clavicular Joint, recurrent	4
Compound	6	Dislocation of Shoulder:	
Old ununited	2	Recent	7
Fracture of Radius:		Old irreducible	4
Simple	22	Recurrent	6
Compound	4	Dislocation of Elbow	6
Old ununited	4	Dislocation of Wrist	2
Fracture of Scaphoid:		Dislocation of Hip	4
Simple	8	Dislocation of Ankle	4
Fracture of Femur:			
Simple	19		
Compound	4		
Total			224

The reduction in morbidity is obvious. The direct and secondary dangers are local infection, nerve trauma, and emboli. These factors are considered remote as the actual fracture site or joint is never entered and we have never encountered nerve trauma or emboli. Hospitalization is reduced, the ambulatory treatment of fractures being greatly extended.

Figures 1, 2, and 3, demonstrate the intramuscular injections of procaine in the treatment of fractures.

In conclusion we wish to again emphasize the valuable role local anesthesia may play not only as an analgesic agent but as an adjunct in the treatment of fractures and dislocations. The blocking of the reception of nerve stimuli by the local action on the motor end plates of the muscles involved in the fracture or dislocation combined with a regional sensory nerve blocking affords safe, efficient and prolonged relaxation not seen under general anesthesia.

It is the common practice throughout the land to administer ether or some general anesthetic agent in the imperative treatment of traumatic surgery. The employment of local anesthesia appears to be restricted to that group of patients physically unfit for general anesthesia. The decrepit are permitted local anesthesia so as to be spared the direct and secondary dangers attending general anesthesia. It seems logical

that the anesthetic of choice for the poor risk should also be favored for the strong.

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DISCUSSION

Dr. George B. Lake, North Chicago: I would like to know the percentage of procaine used.

Lieut. Commander M. D. Willcutts, Great Lakes (closing the discussion): We use three-fourths per cent. procaine. At the Naval Hospital we are very busy so for my own convenience I use three-fourths per cent. stock solution. I use that strength solution routinely for intramuscular injections. I have not employed any anesthetic except some type of local for closed or open fracture cases and general surgical operations in over 2,000 consecutive cases performed at the Great Lakes Hospital during the past two years.

The question of the Bohler method—I did refer to it very briefly because I do not condone it. I consider it to be unnecessarily dangerous. We are certainly producing minute compound fracture when we inject directly into the hematoma at fracture site. I believe that injecting 5 cm. at least from the fracture site to be much safer and as efficient.

DIGITALIS AND QUINIDINE—THEIR USE*

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In order to understand the action of and indications for any therapy in cardiac disturbances, it is best that I briefly summarize the important basic physiology and then define the pathologic disturbances of rhythm and force, which, aside from myocardial degeneration and valvular defects, are a most important indication for treatment.

The heart, as we all know, is controlled by a dual mechanism of nerves, the inhibitory receiving its branches from the vagus and the accelerator from the sympathetic, both of which normally keep each other in balance and enter into the formation of the cardiac plexus. The action of both these fibers have been demonstrated experimentally and it has been shown that branches from these nerves enter actively into the control of the cardiac rate which has its origin in a little patch of specialized tissue lying in the right auricle at its junction with the large veins and is known as the S. A. node, or Keith Flack node.

It has further been shown that impulses arising in the S. A. node pass down the auricle by way of the muscle fibers to the auriculoventricular septum wherein is located a ganglion known as the A. V. node or node of Tawara. The impulses continue to travel from the A. V. node down the bundle of His by way of nerve fibers to the ventricular musculature and the chordae tendinae. The bundle of His, by the way, is the only proven tract of nerve fibers known to exist in the heart.

The heart as an organ possesses a physiological function peculiar to itself only, namely—automaticity. By this is meant that the stimuli which excite it to activity arise within the tissue itself and are not brought to it through extrinsic nerves. Furthermore, the musculature has two physiological properties whereby it differs from other muscle tissue.

First, the power maximal contraction, which means that the musculature will contract with its full strength, no matter that the degree of stimulation. And, second, the refractory period of the heart which is a period of inexcitability. This period lasts practically the entire systole, during which time any stimuli reaching the ventricle do not produce a contraction. However, stimuli reaching the ventricle during diastole produce another contraction which is followed by a longer rest period known as a compensatory pause.

Now for the pathologic disturbances:

1. Sinus arhythmia—the irregularity is of the whole beat and the pulse and apex correspond; increase in rate with inspiration and decrease with expiration.

2. Extra systoles—caused by impulses arising either in auricle or ventricle. If arising from ventricle it causes it to contract, anticipating the next regular impulse, which arrives when the ventricle is in the refracphase and hence it does not contract and the auricular impulse is wasted. The diastole will be longer because it will be longer before the next impulse reaches the ventricle. If it arises in the auricle then there will

*Presented at scientific meeting, Oak Park Hospital, May, 1932.

be a premature contraction of both auricle and ventricle followed by a normal pause.

3. Paroxysmal tachycardia—characterized by paroxysmal attacks in which heart rate is between 100 and 200, beginning and ending suddenly. The heart rate is regular.

4. Auricular flutter. Impulses arise from a single focus in auricle and cause it to beat rhythmically at a rate of 200 or over. Ventricular rate is usually about half this because of partial heart block producing a 2:1 or 3:1 rhythm.

5. Auricular fibrillation. In this case the auricles do not contract normally but are in diastole with many fibrillatory twitchings arising from pathological impulses originating in many areas. Numerous abnormal impulses are carried to the A. V. bundle and reach the ventricle in irregular fashion, making the ventricular contractions disturbed and irregular.

6. Heart block is a condition of faulty conduction of bundle of His in which ventricle assumes their own control independent of pace maker. Beat about 30 per minute (Stoke Adams Syndrome).

7. Alternation of the heart. Strength of the systolic beats of ventricle vary so that larger or smaller amounts of blood are expelled at alternate contraction.

We come now to digitalis and its use in cardiac pathology. Digitalis affects the heart in two ways:

1. It stimulates the vagus center in the medulla.

2. It exercises a direct action upon the cardiac muscle.

By its action upon the vagus it delays the conduction of excitation between the auricles and ventricles, and thereby increases the interval between auricular and ventricular contraction.

The indication for digitalis has been summarized by Eggleston as follows:

1. The indication for the administration of digitalis is determined by the degree of heart failure and not by the cause of the failure.

2. The dosage and the criteria of the action of digitalis are identical irrespective of the cause of the heart failure.

The types of heart failure where digitalis is definitely indicated is as follows:

1. Auricular flutter. The cardinal indication for the exhibition of digitalis is auricular flutter and the indications for digitalis is this form of arhythmia which are just as definite when there is no dropsy or signs of broken compensation as when such findings are present. These signs of congestive heart failure are due to fatigue of the ventricle caused by the rapid contractions and will seldom occur if the flutter is properly treated.

2. Auricular fibrillation in which the auricles beat rapidly—150—300 times a minute and the ventricle half that rate; digitalis is indicated when it cannot be controlled by quinidine.

3. Impaired tonicity. The characteristic signs of loss of tone of the myocardium are: Edema, cyanosis, swollen liver. Such symptoms associated with auricular flutter are almost always secondary to this and digitalis is indicated.

Now for the contra-indications for use of digitalis:

1. Increased irritability.

(a) Extra systole. The evidence that digitalis increases the property of irritability seems conclusive. One of the commonest cardiac signs of toxic doses of digitalis is extra systole. If extra systole is the only disturbance found digitalis is contraindicated. But if occurring with a dilated heart the extra systoles should be ignored as far as contraindications are concerned.

(b) Paroxysmal tachycardia. The results obtained with digitalis in this condition have been unsatisfactory and paroxysmal tachycardia can be produced by digitalis. Therefore, quinidine is indicated.

2. Impaired conductivity. As conductivity is depressed by digitalis it is harmful in any type of block unless there is some associated loss of tone and then it may be given.

3. Myocardial infarction: In patients with coronary occlusion it may be given late when abnormal rhythm or loss of tone occur. It should not be used in angina pectoris.

Doubtful Uses of Digitalis.

1. Pneumonia. The question whether the use of digitalis in pneumonia does good or harm has been discussed and is still unsettled. One author uses it routinely in his treatment of all pneu-

monias while another found that in two groups one digitalized and the other not, there were 100 deaths in the control group while there were 122 deaths in the digitalized group.

2. Digitalis in myocardial degeneration needs the most careful consideration; its range of utility is exceedingly narrow, for quite apart from the fact that it may be distinctly contraindicated, as in partial heart block, there is no clinical evidence to warrant its routine prescription. Digitalis treatment, except under certain special circumstances, has no useful application in the treatment of myocardial degeneration.

Dosage and Methods of Administration. In order to understand the method for administration it is best to remember the vital point that full digitalization must be administered before we can say that the desired effect cannot be produced on any particular patient. And by full digitalization is meant the administration of an amount of the drug sufficient to secure beneficial changes in the circulation, or to induce symptoms of toxicity.

In administering digitalis it is extremely important to realize that a certain amount must be accumulated in the body before any therapeutic effect will become evident. The drug is slow in affecting the heart, while on the other hand, its action, after being instituted is prolonged. If the dose be repeated over a period of time at a rate faster than that of elimination, the action of the drug becomes cumulative. While speaking of cumulative action it is best that I mention here the common symptoms of digitalis toxicity encountered such as: nausea, vomiting, headache and vertigo. Toxic effects on the heart in the form of extra-systoles, coupled rhythm, partial heart block, etc., may appear. The appearance of any of these symptoms calls for the cessation of further dosage for at least 24 hours until untoward effects disappear.

According to Eggleston the total amount of digitalis necessary for obtaining full therapeutic benefits may be calculated from the patient's weight. By this method the average total dose by mouth of a carefully standardized tincture is 0.15 c.c. (2.25 mms.) per pound body weight. In other words, a man weighing 150 pounds would require 150 x 2.25 or 337 mms. of a tincture. It is also well to remember here that a drop from a dropper is not a minim and this may be the cause sometimes for failure.

There is no fixed method which must be followed in the administration of digitalis. For patients suffering severe decompensation under close observation, full therapeutic effects can be obtained in from 12 to 36 hours, in the majority of cases, by following the method of administration outlined by Eggleston. The total amount of digitalis required is calculated from the weight of the patient. One-third to one-half of the total amount required may be given at a single administration to be followed in 4-6 hours with one-fourth to one-third of the total amount. The remainder is then given in a few doses of small size at intervals of 4-6 hours. Before giving the first dose it is important to make certain whether or not the patient has been taking any digitalis during the two weeks immediately preceding, so that the size of the dose may be diminished, if necessary. The interval of 4-6 hours between doses allows time for complete absorption of each dose before the succeeding dose is given, therefore, avoiding overdosage.

It is not very wise to always follow this method of massive treatment, but it is always well to know the total amount required for full digitalization and with that in mind proceed in a somewhat modified manner.

In the treatment of patients who are not in imminent danger of failure, such as patients seen in office practice, rapid digitalization is not indicated. Doses of 15 or 30 mms. (30 to 60 or 60 to 120 drops) of tincture, may be given three times daily, or as often as every 4-6 hours until the signs of digitalis action appears. In each case the total amount of drug necessary to obtain full therapeutic effects should be estimated and borne in mind. By this method full digitalization may be effected in from 3 to 7 days, depending upon the size and frequency of doses.

After the stage of full therapeutic effects has been attained the patient can be kept in a state of optimum benefit through the daily administration of from 15 to 30 minims of the tincture. The daily maintenance dose varies with the individual and the product used and after it has been worked out it may be used regularly for a long period of time without further change. The amount of digitalis that disappears from the body each 24 hours has been found to average

between 22 to 43 minims (45 to 90 drops) of tincture.

Before leaving digitalis entirely I would just like to mention its use in children with heart disease. One author in a report of sixty-seven cases found that it did not afford much relief. Two other authors, however, seemed to think that the use of digitalis was beneficial and that the signs of congestive heart failure rapidly disappeared with its use. It was also found that children weighing over 40 pounds required about 50 per cent. more digitalis per unit of body weight than would be required for adults.

Now that I have finished digitalis I come to quinidine and its uses in heart disease. We know that quinidine has good effects in some cases of cardiac disease such as auricular fibrillation, paroxysmal tachycardia and the rapid heart due to hyperthyroidism. Fibrillation being the most important, I shall begin by discussing it, but before doing so it is best to establish certain criteria for the selection of those cases in whom the drug should be tried.

1. It should be used in those cases in whom it seems desirable to abolish the fibrillation for the symptomatic relief of the patient. If the patient has no distressing symptoms quinidine is not indicated.

2. The most favorable cases are those in whom the fibrillation has been of short duration.

3. Those cases are most favorable that have no signs of congestive heart failure or in which the signs of failure have responded well to digitalis. Those that have not responded should not be given quinidine.

Next I come to the use of quinidine in the paroxysmal tachycardia. This drug seems to control the attacks when given at the time of attack, and when small doses are taken over a long period of time the attacks seem to disappear entirely.

As to its use in hyperthyroid tachycardia, it seems to have been found that the heart rate persists in being rapid after thyroidectomy and that quinidine brings the sinus rate back to normal.

There seems to be some divergence of opinion as to dosage in the administration of quinidine, but this consensus of opinion is as follows: The first day the patient is given 3 grains to determine the absence of quinidine idiosyncrasy. If none of the symptoms of cinchonism develop, the next day the patient is given 6 grains of quinidine every four hours day and night.

The maximum amount of quinidine that can be given safely in 24 hours varies between 30 to 40 grains. After sinus rhythm has been established 3 grains three times daily and should only be taken at times of attack.

Before leaving quinidine it is best that I mention the toxic symptoms as nausea, vomiting, dizziness, headache, tinnitus, diarrhea and urticaria which call for caution and discontinuance of treatment. Pushed farther than this we get the effects on the heart which may be anything from toxic rhythms to complete standstill of auricle and death.

CONCLUSION

The facts set forth in this paper are not new; but just brief, concise statements regarding the basic pathology, the indications for treatment and the methods for obtaining the best therapeutic results.

Facts of this type are always important enough to be remembered.

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THE NECESSITY FOR CORRELATION OF COUNTY SOCIETY PROGRAMS*

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To begin, the title of this paper limits its scope very decidedly to the smaller societies in areas of relatively sparse population. Most of our county societies fall in this classification. Some of them have already used procedures similar to ours, and I have no intention of attempting to present a new idea, but to emphasize the values of one already in use.

Perhaps in the birth agonies of my talk it will be well to touch upon the necessity for scientific programs themselves. This sounds so obvious as to border on foolishness, but it is not. Many members seem to have missed the point entirely. The principal object of the scientific part of county society programs is not to give a great deal of technical information, or to enable the listener to go forth and immediately put into use procedures of which he has never heard before. No man is enabled to dash out and hemisect a patient by hearing the most learned and able discussion of extensive thoracoplasty, but the discussion gives him a notion of the present-day trend of thought in thoracic surgery, and is accordingly valuable, even though the listener never has occasion to examine another chest. The idea of keeping abreast of modern medical thought should receive most emphasis, and it does not always get it. The digestion of the literature is difficult; a very *wide* wandering in the acres of print is always a physical impossibility for the general practitioner—it is very hard to combat weariness and the innate laziness which all of us have in good share, and for this tendency to fall from grace in the matter of reading there is only one antidote, which is the stimulating presence of those thinkers who are pioneers on the various frontiers of medical advance.

Most of the counties throughout the state have one meeting each month, at which time society business matters, scientific presentations, and sociability are combined. This is all very well —but there are twenty-nine or thirty other nights in the month, some of which ought to be devoted to medical culture.

More frequent meetings within the same county present almost insuperable difficulties. The small groups are unable to support a secretarial outlay, but they are still large enough to inflict a considerable burden of correspondence, collections, and so on, upon the unfortunate secretary and his office girl, and the system of notification—which ought to be unnecessary, but is not—is enough to put a few burrs in the hide of the most docile plow horse. I can testify from personal experience that one meeting per month is all I care to negotiate. Coupled to this is the idea that unless there should be a sudden revival of interest on the part of the membership, only a faithful few can be counted upon for frequent attendance, and the monetary cost, in our own group, would present a problem.

Still there remains the fact that many are not satisfied with the amount of scientific pabulum that is being dealt to them, and for this group we have worked out a scheme of cooperation between the counties. Thursday night of each week has been sanctified to the glory of medicine by Franklin, Perry, Williamson, Union and Jackson counties, which gives those who are interested four meetings a month to attend. The results have been very good. Each secretary announces all meetings to the membership of the adjoining counties as regularly as he does to his own. We have had almost no overlapping either of speakers or subject matter, because the secretaries know fairly well in advance the programs of the other counties. We are fairly good travelers in the south end of the state, and attendance has been, in the main, quite fair. The whole area has benefited by the arrangement.

But even this leaves something to be desired. It is fifty odd miles from my home to that of the most distant secretary of this group. Obviously, this prevents the frequency of secretaries' conference that would be desired.

Two of our leaders have concocted a scheme for remedying these defects. This idea is being assiduously promoted, and if it ever develops, the intent is for the secretaries to block out a joint program a year in advance; to abandon the idea of each society acting as a unit, and, selecting a centrally located town, to equalize the problems of distance, to have a weekly seminar for the whole group of counties, thus eliminating over-lapping. To be sure, each county society must continue to function to re-

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tain its autonomy—and by thus separating business and scientific sessions, both will profit. By drawing from a large area, with each member of each county society knowing that his own group is committed to the success of the undertaking, we should be able to feel confident of a good turnout and avoid an all too common source of secretarial embarrassment. This scheme is not without its faults, but, in the words of the famous Tommy Atkins, "If you knows of a better 'ole, go *to* it."

PERIARTERITIS NODOSA WITH REPORT OF A CASE*

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Although periarteritis nodosa has been known as a pathologic entity for about 75 years (Kussmaul and Maier, 1866) and had been described about fifteen years before that (Rokitansky, 1852), it is only within recent years that papers dealing with this disease have appeared in considerable numbers. Perhaps the greatest stimulus to the study of this condition has been the discovery that, at least in some of the cases, it is possible to make the diagnosis during the patient's life, and that the greatest stumbling block is not so much the inherent diagnostic difficulties, which are considerable, but the infrequency with which the consideration of this disease occurs as a possible solution in a puzzling set of symptoms.

Periarteritis nodosa is a rare infectious disease of as yet unknown etiology, characterized pathologically by the formation of nodules and later of aneurysms along the course of blood vessels, and clinically by protean manifestations which depend upon the location of the lesions. Because of the various organs and groups of organs involved, this disease has interested not only internists and surgeons, but also members of all the specialties.

In spite of the acute interest in the disease, it remains one which is rare. There have been about 150 cases reported. No one individual has seen more than a very few. Nor is the disease one which is rare only because it is being overlooked; for even in pathologic institutes where the condition has been known for a long time, it is only rarely seen. At the Cook County Hospital in Chicago, for instance, in about 3,500 necropsies performed in the last three years there were seen three cases, one confined to the gallbladder, the other two generalized.[1] At the Peter Bent Brigham Hospital in Boston two cases were found in 2,032 necropsies.[2]

Although periarteritis nodosa has been reported from nearly all parts of Europe, from England, and from many sections of North America, it is thought by some (Balo) that there is an area of greater frequency in central Europe, especially in Hungary. The disease has been described in dogs, calves, swine, and deer; nearly all these reports are from central Europe. A few times there has been an epidemic-like grouping of cases among these animals.

In man the disease has been described at all ages from three months to 78 years; most of the cases have occurred between the ages of 20 and 40. About four times as many males are affected as females.

There can be no doubt, judging from the observed tissue changes, that periarteritis nodosa is an infectious disease. On this all writers are agreed. The difference of opinion is as to whether it is a specific disease with a single etiologic agent or the unusual manifestation of one or of many infections. The early opinions that syphilis may have something to do with this condition may now be entirely disregarded, as there is no evidence to support this contention.

On several occasions streptococci have been isolated from the blood or tissues of patients with periarteritis nodosa and a few times animals inoculated with tissues obtained at necropsy have developed streptococcus infections. The disease itself, however, has not been reproduced with cultures of these organisms. The idea that it requires a special type of individual, perhaps an "allergic" one (Gruber) in order for these or other organisms to produce manifestations of this disease may, of course, be true; but at the present time it is only a conjecture incapable of proof or denial.

That periarteritis nodosa may be a special manifestation of the rheumatic diseases was first suggested by Aschoff, and has since been an

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attractive theory (Herlitz).[3] Histories of rheumatism, tonsilitis, and endocarditis have been found in many of the cases. The resemblance of the periarteritic nodule to the rheumatic nodule has been pointed out. The evidence is suggestive, but at the present time not conclusive.

Most recent writers lay stress upon the work of Harris and Friedrichs[4] who reported having reproduced the disease in rabbits by the inoculation of the filterable material obtained from the affected tissues of the human. Their work has never been confirmed; but it has never been disproved and it is still possible that periarteritis nodosa may be due to a filterable virus.

Studies of the youngest lesions in periarteritis nodosa indicate that the infective agent, whatever it may be, is brought to the site of the lesion with the blood. Thus in larger arteries the infection apparently starts about the vasa vasora, and in the very small ones, beneath the intima. The course of events which follows this initial lesion has been conveniently divided into four stages, which, however, pass insensibly one into the next. In the first or degenerative stage there is found an edema and later a necrosis of the media of the vessel. This is followed by the stage of acute inflammatory exudation. Neutrophil leukocytes, and less regularly lymphocytes, plasma cells, and eosinophil leukocytes, infiltrate the media and adventitia. This infiltration is often eccentric and produces a nodule along the course of the vessel. If there are numerous nodules in the same vessel, they are strung along the course of the vessel like so many beads. Grossly visible nodules are not necessarily present and in many cases only the microscope will disclose the typical changes. At the site of the periarteritic lesion the vessel usually becomes thrombosed. Late in this stage aneurysms may form along the course of the vessel.

The cellular exudate is gradually replaced by fibroblasts and vascular granulation tissue in the third (or granulation tissue) stage. The nodules about the vessels become larger, often grossly visible for the first time in this stage. Aneurysms are more frequent at this time than ever before. In the last, or healed stage, the only evidence of the previous vessel injury may be a very much thickened vessel with a narrow lumen and a media largely replaced by scar tissue, often in an eccentric manner.

During the second and third stages one or more of the aneurysms may rupture, sometimes with an ensuing fatal hemorrhage. Such fatal ruptures have occurred in the kidneys, stomach and intestines, liver, gall-bladder, brain, lungs, into the pericardial sac, and in other locations.

It is important to remember that the above described stages apply only to an individual lesion and not to the disease as a whole; for lesions of various ages may be found in different organs or even in the same organ.

In most cases vessels in various parts of the body are involved. Occasionally only one organ or organ system is affected. This is especially true of the kidneys. The vessels most frequently involved in the order of frequency are: the renal arteries, 80 per cent.; the coronary arteries, 70 per cent.; the hepatic arteries, 35 per cent.; the arteries of the gastro-intestinal tract, 50 per cent.; the mesenteric arteries, 30 per cent.; the arteries of the muscles, 30 per cent.; the pancreatic arteries, 25 per cent; the arteries of the peripheral nerves, 20 per cent.; the arteries of the brain, 8 per cent. The vessels of the skin and of the retina may sometimes be involved, giving rise to lesions which are pathognomic for periarteritis nodosa.

It is to be expected that when blood vessels as important as those involved in periarteritis nodosa are badly damaged, there will be serious consequences in the organs which they supply. And indeed a whole set of clinical signs and symptoms are due to these secondary effects on the organs, principally to infarctions and hemorrhages. In the kidneys, however, there are very frequent changes which cannot entirely be explained by injury to the larger vessels. Frequently there will here be found an acute or subacute nephritis; the glomerular changes and the degenerative phenomena in the tubules resemble those of any other nephritis. It is only upon examination of the larger vessels that the accompanying periarteritis is found. These patients usually die in uremia.

The healing of periarteritis lesions and of the accompanying infarcts can lead to marked atrophies with deep scarring of organs. Arkin[5] mentions contracted kidneys, hepar lobatum, myomalacia scars, adrenal atrophy, encephaloma-

'lacia, muscle atrophy, and peripheral nerve degeneration as possible sequelae.

Considering the fact that periarteritis nodosa is an infection of the medium and smaller sized blood vessels, also taking into consideration the consequent numerous and varied pathologic changes, it is easy to see why such a mixed clinical picture presents itself. The onset in this disease may be acute, but more often is insidious. There are certain constitutional symptoms present, such as are common to an infectious process or suggestive of sepsis.

Usually the general condition of the patient is markedly affected as evidenced by fatigue, rapid loss of strength and weight, anorexia, and by rapidly increasing pallor. In 66 per cent. of cases fever is present, often accompanied by chills and drenching sweats. While some cases may be subfebrile, others may reach a temperature of 105°. A remittent type is not infrequently encountered, and afebrile periods are not uncommon. Irregular rises of temperature may correspond to the development of new foci of infection or to the flaring up of old ones. The pulse is disproportionately rapid and of poor quality, running from 90 to 140. A pulse of 100 to 130 without fever has been noted, and with a variable temperature, the pulse often remains around 120. In the active stage a leukocytosis of the polymorphonuclear type is present, which usually varies from 15 to 40 thousand with a displacement to the left. At times there is a marked eosinophilia. Lamb[6] reports a case with 51 per cent. and Strong[7] one with 79. There is a marked drop in the hemoglobin to 50 or 60 per cent. with a corresponding reduction in the number of erythrocytes. Kussmaul and Maier suggested the name of "chlorotic marasmus" as a term descriptive of the anemia. The blood pressure may be low or normal, and has been found to be high in some cases of severe kidney involvement. Generalized muscle and joint pains are common complaints.

In addition to the generalized manifestations of this disease, various other symptoms occur according to the location of the arterial involvement. Bennet and Levine[2] have described the following types: renal, cardiac, gastro-intestinal, neuromuscular, cerebral, and dermatologic. Symptoms may be more or less confined to any one of these types, or there may be various combinations which cause irregular clinical pictures most difficult of interpretation.

When the renal type predominates, the urine shows albumin, casts, and blood cells. Azotemia may be marked with all the clinical signs and symptoms of uremia present. Also hematuria with symptoms of kidney infarction may occur.

In the cardiac type there may exist a functional disturbance of heart activity. Apical systolic murmurs may be heard. Anginal attacks with symptoms of myocardial failure occur. These cases fail to respond to digitalis therapy. Intrapericardial hemorrhage has been reported by Vance and Graham.[8]

The gastro-intestinal or abdominal type presents one of the most interesting array of symptoms. Nearly all cases present some gastro-intestinal symptoms, but the most intriguing symptom complex is that of the acute surgical abdomen. In such cases we have pain, vomiting, tenderness, rigidity, fever, and leukocytosis. This group has led frequently to surgical interference. Cases have been operated on for gall-bladder disease, appendicitis, and viscus perforation only to reveal negative findings. Gruber[9] reports a cholecystectomy for supposed gall-bladder disease in which microscopic sections showed involvement of the cystic artery; Klotz,[10] a case with a supposed suppurative abdominal condition.

Various explanations of these abdominal symptoms have been advanced. Gohbrandt[11] thinks they are due to vasomotor spasm. Kroetz[12] believes the colic is due primarily to vessel spasm of the diseased arteries and secondarily to slight inflammatory irritation of the peritoneum. Actually existing surgical conditions have been known to complicate the disease, such as perforation of an ulcer due to infarction or to hemorrhage from a ruptured aneurysm. It is well to remember that acute abdominal symptoms usually occur in association with other symptoms of the disease. Usually the liver and spleen are not palpably enlarged, but tenderness over the liver may exist; and anorexia, vomiting, diarrhea, melena, and jaundice may be present.

The neuromuscular group is characterized by symptoms of a polyneuritis which may affect the median, radial, tibial, or peroneal nerves. According to Herlitz[3] a flaccid paralysis of the extremities occurs in 33 per cent. of cases. In such cases the pain is usually intense with vari-

ous paresthesias. Distinct atrophy occurs in one-third of the cases. Muscle pains as in polymyositis are a frequent complaint and are especially localized and most intense in the lower extremities. Symptoms of a polyarthritis also are noted. The great frequency of a polyneuritis as the first and predominating symptom is noteworthy.

The cerebral cases show symptoms due to cranial nerve lesions, delirium, epileptiform convulsions, and varying degrees of coma. Kroetz states that periarteritis nodosa of the brain with aneurysms of the larger arteries led in one case to headache, vertigo, and vomiting; and in another, to headaches and weakness of vision with negative ophthalmoscopic findings. Dickson[13] reported a case with symptoms of an acute meningitis but with a negative spinal fluid. Bennet and Levine[2] published the report of a case showing clinical evidence of a meningitis with a marked elevation of polymorphonuclear leukocytes in the spinal fluid but with negative pathologic evidence of meningitis. When arriving at a diagnosis, brain symptoms due to occluded or ruptured arteries should be considered. Balo[14] cites a case in which uncertain clinical symptoms led to the diagnosis of brain tumor. Cerebral symptoms may be caused by an accompanying uremia.

Cases with dermatologic symptoms alone are rare, but various skin manifestations are common in connection with the different types. The most characteristic lesion is the presence of nodules along the course of the superficial arteries or in the subcutaneous tissue. According to Kroetz[12] these vary in size from a pea to a hazelnut and there may be as many as 50 of them. They are present in 20 per cent. of cases. They may be soft and later become hard. Sometimes they are sensitive to pressure. Rarely pulsation can be demonstrated. Punctate hemorrhages occur in about 17 per cent. of cases. While these usually appear early, they may return in recurrent crops. Small or large hemorrhagic areas due to ruptured aneurysms may be found. Other skin lesions noted are exanthemata, urticaria, erythema nodosa, and, as in our case, a pustular rash. Carr[15] reports a clinically diagnosed case with Raynaud's symptom complex.

The diagnosis of periarteritis nodosa is rarely made during life, only seven per cent. of cases having been diagnosed antemortem. A positive diagnosis can be made histologically from an excised skin nodule. According to Matthes,[16] pulsation in the skin nodes is pathognomonic; and, so far as is known, multiple aneurysms do not appear in the superficial arteries in any other disease. Diagnosis has been made from the histologic examination of nodules removed during operative interference as in cases reported by Gruber[9] and others. The presence of characteristic nodules along the course of mesenteric vessels may lead to the correct diagnosis. Surgeons should search carefully for such characteristic lesions when an apparently acute surgical abdomen is opened with negative findings. The ophthalmologist may give a clue to diagnosis by finding nodules or localized thickenings on the retinal vessels.

Certain symptom complexes strongly suggest periarteritis nodosa and may be of diagnostic aid. Meyer[17] in 1921 suggested the following triad: chlorotic marasmus, polyneuritis and polymyositis, and gastro-intestinal symptoms. Kroetz suggests the combination of acute subcutaneous nodules, gastro-intestinal symptoms, peripheral neuritis, and nephritis. The picture of a generalized sepsis may predominate and lead to the most common diagnostic error. One important point to remember in this connection is that a flaccid paralysis does not belong to the picture of sepsis except sometimes in puerperal sepsis; and, therefore, when a flaccid paralysis occurs in a polyneuritis, accompanied by an unexplainable sepsis, we should always consider periarteritis nodosa.

The prognosis is very unfavorable. Kroetz states that 92 per cent. of patients thus afflicted die, the duration of life being ten days to two years. The average duration in 58 cases reported by Gruber was four and seven-tenths months. That the disease is capable of spontaneous healing has been shown definitely in two cases; one reported by Von Haun[18] and one by Spiro.[19] Gruber is skeptical of cases of periarteritis nodosa reported as recoveries, while other authors remind us of late degenerations occurring in the heart and kidneys together with rupture of aneurysms long after apparent recovery has taken place.

There is no specific treatment for this disease.

Symptomatic measures of relief may be used. Carling and Hicks[26] reported a recovery after intravenous administration of an arsenical.

Report of Case: Male, age 47, married; occupation, fisherman; entered St. Francis Hospital on June 15, 1931. Family history negative. Past illnesses: Pneumonia, age 16; one attack of tonsillitis, age 30; lues denied.

Present illness began six weeks before admittance to hospital. Fatigue, especially in the morning, was first noticed. This was soon followed by anorexia, lumbar pain, nausea, and occasional vomiting. Frontal and occipital headache existed. One week prior to admittance to hospital patient had noticed hematuria and was sent to the urologic service of Dr. W. H. Holbrock. Cystoscopic and roentgenologic examinations demonstrated bilateral renal hematuria with no evidence of tumor or calculus. On account of negative urologic findings the case was transferred to the medical service, June 20, 1931. While still on the urologic service, the patient complained of rather severe pains in the lower extremities with general muscular tenderness, nausea, vomiting, low abdominal pain, and profuse perspiration. On admittance Dr. Holbrook had noted numerous petechiae on the lower extremities.

Initial examination on the medical service showed an obese individual weighing about 245 pounds, comparatively at ease, but apparently very ill. There was pallor, normal facies, and moist skin. Pupils were equal, reacted to light and accommodation; eye movements normal with no disturbances of vision. The tongue was broad, pale, heavily coated, and showed indentation of teeth. A mild gingivitis was present; tonsils appeared normal; there were no palpable cervical glands, no enlargement of thyroid, and no venous distension. The lungs were negative; the heart tones faint; and on account of obesity, the heart borders could not be definitely outlined. There was slight tenderness in the right hypochondrium, liver and spleen not palpable. The peripheral arteries showed no evidence of sclerosis. The skin showed fading petechiae on the lower extremities. The hands were dry with a few palmar nodules varying in size from a pin head to a pea. These lesions were tender and faded upon pressure. Examination of genitalia and rectum was negative.

During his subsequent illness, up to July 10, the patient showed the following symptoms: The temperature for the most part was normal. There were occasional rises to 100°. The pulse varied from 76 to 96, respirations from 18 to 28; blood pressure, systolic 140 to 150, diastolic 76 to 98. Perspiration was profuse and there were crops of petechiae upon legs and a pustular rash on chest and face. There was frequent and profuse nosebleed, and frothy bright red expectoration. The patient suffered from marked anorexia, frequent nausea and vomiting with occasional hematemesis. There was epigastric pain and diffuse abdominal pain with tenderness. Hiccough and restlessness also were present.

The laboratory findings were as follows: Urine examination revealed a large amount of albumin with an enormous number of red blood cells and 30 to 40 pus cells to a microscopic field. Urinary output in twenty-four hours varied from 180 to 720 c.c. On June 6 the patient had 75 per cent. hemoglobin, 3,320,000 red cells, 8,800 leukocytes, and 72,000 platelets. The differential count showed 80 per cent. polymorphonuclears and 20 per cent. lymphocytes—5 per cent. large and 15 per cent. small. Blood chemistry estimation gave the following results: Urea nitrogen, 50 mg.; sugar, 129 mg.; creatinine, 5.7 mg., and calcium 6.6 mg. (per 100 c.c. of blood). On June 18 blood urea nitrogen had advanced to 65 mg. and creatinine to 18.9 mg. By July 7 the hemoglobin percentage had dropped to 45 per cent., the red cells to 2,340,000, the leukocyte count remaining normal.

On July 9 there was dyspnea, also severe precordial pain. Patient vomited coffee ground contents. On July 10 precordial pain continued, respiration 30 and shallow, cold sweat, weak thready rapid pulse; Exitus lethalis.

Diagnosis: Subacute hemorrhagic nephritis, uremia, secondary hemorrhagic diathesis.

Necropsy: The body was that of a well developed white man. It had been enbalmed. The only noteworthy external findings were the skin lesions mentioned above.

The principal findings were in the heart, kidneys, and gall-bladder. The heart was slightly enlarged, most of the enlargement being due to dilatation of all the chambers. The left ventricle was slightly hypertrophied. The only valvular pathology was on the mitral valve. On the auricular surface of this valve there was a purplish-blue nodule one millimeter in diameter raised one millimeter above the surface. About a centimeter away, and about two millimeters from the free margin of the valve, there was a flatter hemorrhagic area one by two millimeters. These lesions were found microscopically to be aneurysmically dilated small arteries which pushed up the endocardium. The lumen was made up of coagulated blood, while the wall was thin and in places infiltrated with macrophages. Other small arteries beneath the endocardium were apparently normal. The coronary arteries were dilated and contained a few small yellow plaques.

Both kidneys were slightly enlarged. The capsules stripped with some difficulty, and the surfaces were irregular due to the presence of several deep depressions which extended through the cortex. When these areas were cut, strands of white tissue were seen reaching into the medulla. The lesions resembled old scarred infarcts. The cortex was wide (6 mm.) and yellowish, with tiny red dots scattered uniformly through it; it was not well differentiated from the medulla. The renal pelves contained a small amount of slightly cloudy fluid. In the right pelvis there was a bluish nodule one and five-tenths millimeters in diameter which projected one millimeter into the lumen; it was identical in appearance with the one seen on the mitral valve. Histologically two sets of changes were to be seen. The first was that of an ordinary subacute nephritis, with crescentric layers of fusiform or spindle-shaped

cells partially or even completely replacing the glomeruli, and marked degenerative phenomena in the tubules. In addition to this there were acute changes in the medium sized arteries, especially the interlobular and arcuate arteries. Some of these showed simply a necrosis of the wall, especially of the media, while others showed in addition a perivascular accumulation of polymorphonuclear neutrophil leukocytes and a few lymphocytes and plasma cells. The deeply scarred areas were made up of entirely obliterated glomeruli and cystically dilated tubules, with marked increase in interstitial connective tissue. The vessels in these regions were markedly thickened and sometimes the thickening was decidedly eccentric; the lumens were narrowed.

The gall-bladder was slightly distended and filled with golden brown bile. There were no stones. The mucosa was slightly trabeculated and through it there were seen bluish nodules, some just beneath the mucosa, others deeper in the wall. When these were cut across they were found to be round or oval, deep red, and resembled clotted blood. Eight such lesions were found in the gall-bladder, and they varied in size from two to four millimeters. Microscopically these lesions represented greatly dilated blood vessels filled with recently coagulated or partly organized thrombi. The walls of the vessels were nearly all edematous, and many of them were infiltrated with lymphocytes and plasma cells, which usually separated the muscle fibers of the media. Only one lesion showed a considerable perivascular infiltration like that in the kidneys.

There were no other findings of note. Neither the liver nor the spleen was enlarged. The brain and peripheral nerves were not examined.

Summary: A brief review of the etiology, pathology, symptomatology, and diagnosis of periarteritis nodosa is presented. In addition, a case is reported with the following principal features:

1. The clinical course of the disease was that of the nephritic type, with uremia.

2. The marked hemorrhagic diathesis with thrombocytopenia, evidenced by severe epistaxis, hemoptysis, hematemesis, and petechiae, was secondary to the uremia. The early symptom of marked hematuria with gross blood was probably due to the aneurysms in the renal pelvis, but may possibly have been part of the hemorrhagic diathesis.

3. To the other skin lesions previously described we now add a pustular eruption. The patient had also the tender, red nodules which have often been mentioned.

4. An unusual pathologic finding was the presence of aneurysms on the mitral valve leaflets.

5. In retrospect it seems that the presence of a subacute nephritis with uremia in a patient with abdominal symptoms, severe pains in the lower extremities, and with nodules in the skin, might have led to a possible diagnosis of periarteritis nodosa, had the condition been called to mind.

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DISCUSSION

Dr. James G. Carr, Chicago: Mr. Chairman and Members of the Section: A few years ago Dr. Parker presented an excellent review of a subject that was new at that time—agranulocytosis. I feel that both he and Dr. Bohrod are entitled this morning to congratulation on this excellent presentation of another rare disease, a disease which does not bid fair to become so well known and perhaps to be treated so success-

fully as has agranulocytosis in the four or five years which have elapsed since Dr. Parker's review.

I want to bear on only two points—first of all, the etiology of periarteritis nodosa.

Thus far we have no reason to believe that it is due to an organism which is specific in nature. Apparently the disease is one in which the main symptoms and the physical findings and the blood findings, aside from the impossibility of demonstrating positive cultures, are identical with the usual course of a sepsis. In the case we reported we felt that we were dealing with a general sepsis which manifested itself rather characteristically in widespread involvement of the extremities and the internal organs by a vascular disease; in other words, sepsis plus the signs of widespread vascular disease ought to excite in one's mind the possibility of a periarteritis nodosa.

The disease occurs in the lower animals. It has been found both in domestic and in wild animals. The disease probably does terminate in healing in certain cases. One of the German authors, upon whose work we happened when we were studying this subject, described two cases which he defined as periarteritis nodosa obsoleta in individuals who had died, one of them I think from a rupture of a periarteritic aneurism in the brain a long time after subsidence of the original symptoms and after the patient had been treated for sometime for syphilis because a 4+ Wassermann was found. Elsewhere in the body the disease was healed and the aneurism did not show at that time an active process.

Gruber, in a most extensive monograph on the subject, came to the conclusion that it was due probably—he specifically stated that this supposition was an hypothesis—to a non-specific infection in a hyperergic individual which, after all, is not very illuminating when one is hoping to find the specific cause of this particular disease. It seems to me that thus far the evidence is in favor of a non-specific infection and that we have to fall back on our conceptions of constitution to explain why it only occurs once in 2,000, 3,000 or 4,000 cases of illness, or even less than that. In explanation of the rarity of peri-arteritis nodosa we have recourse to this hypothesis of constitution and individual reaction to infection.

The case under our care was characterized early in its course by disease of the extremities. The disease ran a fairly acute course. So far as we could determine our patient was sick only about six weeks, some thirty-eight or thirty-nine days as it was dated on our chart from the day on which he said he was first taken sick with pain in both legs. This pain continued. It could be relieved by putting the feet and legs in cold water. The pain was aggravated by allowing the legs to hang. At the time of admission to the hospital there was evidence of disease of the right foot, and eventually there developed gangrene of two toes and very definite evidence of beginning gangrene involving the foot. Later on in the disease he developed pain and stiffness in the right arm and numbness and pallor of one or two of the fingers on the right hand, and there was also some distress in the left arm and pain in both legs. The pain was not confined to the leg in which the vascular disturbances were so well marked.

Only a day or two before his death one of our attending men at the County Hospital—I mention this not as a reflection but rather for emphasis—a well-trained neurologist, diagnosed this as probably a multiple neuritis. In view of the extensive vascular disturbance with the sepsis, the vascular disturbance not being accounted for satisfactorily on the basis of any known form of vascular disease, we were fortunate enough to guess at periarteritis nodosa. The second point to which I would call your attention is the frequent occurrence of peripheral nervous symptoms.

Wohlwill has proposed, after a review of the literature, I believe it is in the closing statement of his conclusions in regard to neuritic manifestations, an explanation which is most acceptable of all those we found in the literature. He maintains that there are three ways whereby the nerves may be involved; first of all, purely as a toxic symptom in the course of a sepsis; secondly, arterial change in the nerves with slight parenchymatous change, and, thirdly, marked periarteritic changes in the nerves with which there is extensive destruction of the nervous tissue. In our case there were no periarteritic changes in the nerves. These are the considerations which interested us most.

The anterior tibial artery, and particularly the branches thereof, in the right foot showed marked changes and very definite closure of the vessels leading to the parts which showed the gangrene.

Milton G. Bohrod, Peoria: The discussion of the etiology of this disease has been marked by many opinions, without sufficient evidence for most of them. You will perhaps understand this when you realize that in a collection of the reported cases there are frequently found two to four papers for one case instead of, as usual, one paper for several cases.

Whether or not this disease is a peculiar manifestation of many different infections or a specific infectious disease is still very much in dispute. There are some findings in comparative pathology that indicate it might be a specific disease. For instance, it has been found in animals to occur in what seems to be an epidemic form. In addition, it has been pointed out by Balo that there seems to be a concentration of cases, both human and animal, in Central Europe. Of course, all this could be explained by the fact that these animals are constituted very much like one another and that they, as well as the humans living in Central Europe, are different from those in other parts of the world and therefore will react differently to various types of infections.

Aschoff at one time pointed out the similarities of this disease to certain rheumatic manifestations, and rheumatism is considered an important etiologic factor by some authors, especially some of the Scandinavians.

Pathologically, there is one finding that is unique in our case and probably needs a little comment, because several people have already asked me "How does it happen that you can get an aneurysm on the heart

valve when the heart valves do not have blood vessels?" I am sure the same question has occurred to some of you. Some time ago, Louis Gross of New York, in his injection experiments on the coronary arteries and the vessels of the heart, found that about 10 per cent. of all the valves were vascularized. There was for a time an ingenious theory that subacute bacterial endocarditis might have this pecular manifestation because it occurred to people with these vascularized valves. At any rate, in our case we were able to find, in addition to the aneurysm, perfectly normal arteries in the valves. This case demonstrates that peri-arteritis nodosa affects vessels wherever they occur, whether these vessels are in usual or unusual locations.

PASTEURIZED vs. RAW MILK*

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Present interest in pasteurization is largely due to the recognized importance of milk as a food.

Following the studies of Sherman and others, the medical fraternity and a steadily increasing proportion of the public agree that "Every child should consume at least a quart of milk per day."

The slowness with which this dictum is being translated into feeding practice is due in part to custom which changes slowly.

This hesitancy to use the desired amount of milk in feeding children is also influenced by the feeling that milk is an expensive element in the diet. Since food solids in dairy products are cheaper than those from any other animal source, parents should be instructed with regard to the economics of diet.

Perhaps the largest stumbling block in bringing about the use of the proper amount of milk by children is the tendency on the part of the children to adjust their diet to that of their parents.

The findings of Sherman and others that adults should use at least a pint and better a quart of milk per day in order to maintain their best physical condition seems to have been largely overlooked. Not only is there need for a better appreciation of the value of milk to the adult but the more regular use of milk by adults would go far toward stimulating children to consume their prescribed quota.

*Read before Section on Public Health and Hygiene, at Springfield, May 18, 1932.

PUBLIC HEALTH DANGER CONNECTED WITH MILK

During recent years the United States Public Health Service has furnished annual reports of the epidemics officially announced by state and municipal health authorities during the preceding year. This list for the thirteen years, 1918-1930, includes 439 epidemics involving 18,777 cases and 719 deaths.

We may compare this with the death and injury which follows in the wake of the automobile and conclude that it is a matter of no great importance. On the other hand, we may look at these epidemics as about 1,500 cases of serious illness per year which might just as well have been avoided had simple and workable precautions been taken.

It is well to keep in mind that this record of epidemics spread through milk is by no means all of the damage done by disease germs spread through this avenue.

Within recent years there has been the recognition of a rapidly increasing number of cases of undulant fever likewise spread through infected milk. The number of these cases in 1930 amounted to 1,450, with a strong probability that we are not yet getting anywhere near the total number of cases in the country.

Tuberculosis does not produce epidemics, and it has long been held that at least ten per cent. of the tuberculosis of children and a smaller proportion of the tuberculosis of adults is due to infection conveyed through milk.

We might just as well frankly recognize that while milk is one of our most important food substances, the fact remains that in the use of this milk there is being spread today in our country a large amount of sickness, misery and death. It is, accordingly, plainly our problem to consider how this spread of disease through milk may be stopped.

Importance of Pasteurization. In the period immediately following the World War, Public Health Departments were more or less disorganized, and the discovering of epidemics and reporting their causes was for a time rather imperfectly carried out. During recent years there have been reported through official channels approximately fifty milk-borne epidemics per year in the United States.

Particularly during the past ten years there

has been a rapid increase in the proportion of milk which has been pasteurized. Today there are no less than 26 cities having ordinances requiring the pasteurization of their entire milk supply. There is also a list of at least 45 cities requiring all of their milk supply except certified milk to be properly pasteurized. In an even larger number of cities the proportion of pasteurized milk is 90 per cent. or more without there being any legal requirements to this end. It is probable that rather more than half of the milk in the cities of the United States has been pasteurized for some years.

If we return to these epidemics which have been reported by the U. S. Public Health Service, it will be noted that out of the, roughly, 50 epidemics a year so reported, an average of less than one per year is attributed to milk which has been pasteurized and the remaining epidemics are caused by raw milk.

If we assume for the sake of comparison, that the amount of raw and of pasteurized milk distributed in the cities of the country is equal, these statistics suggest the chances of contracting disease through raw milk is, roughly, fifty times as great as that of contracting it through pasteurized milk.

When we examine carefully the instances where pasteurized milk is connected with epidemics, it will be found that in each of these cases it is an instance of reinfection of the pasteurized product. A typical example occurred in Massachusetts in 1928 where the milk was produced and pasteurized on a State farm and transferred in cans to a State Institution where it was distributed by an individual who was later found to be in the early stages of the disease. The epidemic of dysentery which resulted could not by any stretch of the imagination be traced to any failure of the pasteurization, but was plainly the result of contamination after pasteurization and before reaching the consumer.

It seems entirely clear that in the instances where milk pasteurized by the holder system has been concerned with the spread of epidemics, the failure has lain not in the process of pasteurization, but in the processes of supervision, which failed to protect properly the milk between the pasteurizer and the consumer. The surprisingly small proportion of these cases which have occurred in the handling of vast amounts of milk in thousands of cities, speaks well for the health supervision of milk supplies.

In this connection it is noteworthy that since the supervision of pasteurized milk in Illinois, outside of Chicago, was placed in the hands of the State Department of Health, no epidemic spread through pasteurized milk has occurred in Illinois.

As has been pointed out in the resolution adopted by the American Public Health Association "pasteurization of milk has proven of inestimable value in the prevention of tuberculosis of children as well as other diseases."

Additional Advantages of Pasteurization. Not only does pasteurization, on the average, apparently increase the safety of milk supplies by approximately fifty fold, but it also has some advantages in the matter of prolonging the keeping quality of the milk. Pasteurized milk keeps sweet longer than does the raw milk before pasteurization. This has often been much overrated, but where the samples of the same milk, raw and pasteurized, are exposed to a temperature of 70 degrees, which is a common room temperature, the increase in keeping quality of the milk as the result of pasteurization is rarely as much as twelve hours. If the raw milk before pasteurization had a poor keeping quality, the improved keeping quality as the result of pasteurization may be less than four hours.

Softening of the Curd in the Stomach. During recent years a good deal of attention has been given to the type of milk curd formed in the stomach of the individual. It is a well-known fact that the human milk curdles in such a soft curd that the movement of the stomach easily breaks up the mass and mixes it with the digestive juices. Cows' milk, on the other hand, tends to curdle in rather solid masses. This peculiarity makes cows' milk especially adapted to cheese making, but causes it to be something of a problem in the stomachs of delicate infants.

There is at present widespread interest in the use of milk from certain cows whose product forms soft curd in the stomach. In this connection it is well to remember that boiling milk before feeding to infants has long been an established practice. Part of the virtue in this practice arises from the resulting safety of the milk, but some of the good results observed also are due to the softer curd which follows the use of

such boiled milk. It is also well to remember that the more satisfactory results which have followed the use of pasteurized milk in infant feeding are also due in part to the softening of the curd which has followed this milder heat treatment of the milk.

Popularity of Pasteurization. The U. S. Public Healtn Service has long been committed to the pasteurization of milk supplies. Practically all of the State Departments of Health have likewise taken the same stand. Many of them have gone so far as to state that there is no such thing as a safe raw milk.

Practically without exception, the Class A medical schools in their teaching now stress the importance of pasteurization as a protection to the public health.

In 1922 the International Association of Dairy and Milk Inspectors adopted resolutions endorsing pasteurization and in 1924 their example was followed by the American Public Health Association.

The municipal departments of health of many of our cities are strongly in favor of pasteurization. The Chicago Department has been in that category since the memorable days of Dr. Evans. There are approximately 100 cities in the United States where pasteurization of the local milk supply is practically complete. At least 40 million and probably 50 million people in the United States are using pasteurized milk.

The movement toward pasteurization is so general that in a number of cities the sale of pasteurized certified milk is becoming common. In Cincinnati, one of the early centers of the certified milk movement, only pasteurized certified milk is now being distributed. Practically the same situation obtains in the neighboring city of Dayton. It is undoubtedly only a question of a short time when only pasteurized certified milk will be sold in Detroit.

Opposition to Pasteurization. It may seem odd that notwithstanding the almost unanimous approval of pasteurization by those who are in the best position to judge regarding its merits there is opposition to this process.

Part of this opposition is inherent in human nature as is well illustrated in a closely similar process, that of tuberculin testing of cattle. One might expect that all good citizens would unite in support of any movement which aimed to provide a better, safer milk supply, but in many cases misguided zeal has led to fierce opposition.

In the case of pasteurization much of the opposition has been based upon the tendency to cling to old customs. Practically all of us used raw milk during our youth and we were slow to see the importance of changing to the pasteurized product. In the northern and eastern part of the country, where pasteurized milk has been common for more than a generation there is little opposition to its use. However, in the south and southwest where it has been more recently introduced it meets much objection. Likewise in smaller places where it is being introduced there is a considerable list of objections which will be raised against it. Perhaps it will be helpful to consider briefly some of these objections.

Monopoly. This cry is always raised when a pasteurization ordinance is proposed. The object of a monopoly is to control commercial operations with the object of raising price. While such an ordinance puts raw milk distributors out of business, experience shows that on the average it creates about a quarter as many new pasteurizing plants so that control of the business is not attained. Close contact with the milk situation during many years has not located an instance where the passage of a pasteurization ordinance was followed by an increase in the retail price of milk. Accordingly as a monopoly move a pasteurization ordinance uniformly fails.

Taste. One frequently hears of the irate individual who cannot to'erate the taste of pasteurized milk.

There are certain feed flavors which are largely removed during the process of pasteurization but where one makes a comparison between a really fine raw milk and the same milk properly pasteurized repeated tests on a large scale have demonstrated that the individual cannot distinguish by the sense of taste between raw and pasteurized milk.

Where pasteurized milk is being introduced in a city it is rather common practice to use up the supply of raw caps which may be on hand. During this period no one notices that the milk is pasteurized but as soon as new caps are used bearing the word "pasteurized," some of the customers insist that they cannot to'erate the cooked flavor.

In practically every city where raw and pasteurized milk are sold the smaller raw milk distributors, when they need more milk get it from the pasteurizing plant, change the caps and deliver it as raw milk. There is no case on record where their customers complained of any cooked taste.

Pasteurized Milk Does Not Sour. One of the most widespread notions is that pasteurized milk does not sour and that the use of old, decomposed, pasteurized milk may lead to unfortunate results especially with children.

Some fifteen years ago it was demonstrated by the Department of Agriculture at Washington that the process of pasteurization as it is practiced at present actually killed off a larger proportion of non-acid forming germs so that the pasteurized milk not only sours readily but sours with an agreeable acid flavor.

All that is needed to disabuse one's mind of the idea that pasteurized milk will not sour is to hold some of it at 70°F. for a little more than a day and note the result. A good quality pasteurized milk should remain sweet and in satisfactory condition at 70 degrees for 24 hours after delivery to the consumer but it will quite uniformly sour before 48 hours at that temperature. The resulting flavor is almost invariably a pleasant acid one. Those who are fond of creamed buttermilk can provide an excellent supply of this material by thorough shaking of bottles of pasteurized milk which have been allowed to sour spontaneously at about 70°F.

Pasteurization Devised to Cover Up Effects of Careless Handling. This criticism has been made since the beginning of the agitation for pasteurized milk. I have been looking for an instance where this criticism can be justly applied and have not found a single one during the past twenty-five years of close contact with the dairy industry.

It is a matter of common knowledge that the pasteurizing milk dealers have long been the leading factors pioneering improvements in milk production and handling.

Somewhat recently an extensive survey of milk conditions was made by the State Department of Health of New York and as the result of that critical examination of the milk supply Deputy Commissioner Paul B. Brooks commented upon the fact that the raw milk coming to the pasteurizing plants in that State was of better quality than the milk which was being sold raw in the same markets.

Pasteurized Milk for Feeding Children. Attention has already been called to the fact that pasteurized milk produces a softer curd in the stomach of the child. As the result children thrive slightly better on pasteurized milk than on raw where large numbers of them have been handled under strictly comparable conditions.

In the early days of pasteurized milk, before the development of a knowledge of vitamins, there was some difficulty in connection with the feeding of pasteurized milk to children. However, since the appreciation of the limitations of cow's milk in the matter of vitamins C and D and the exercise of care in supplying these from other sources, pasteurized milk has been found quite satisfactory for infant feeding.

CONCLUSIONS

It is probably true that pasteurization reduces somewhat the vitamin C content of cow's milk, though even here there is not entire agreement among the students of this problem. This reduction is of slight moment since cow's milk is so deficient in vitamin C that this vitamin should regularly be supplied from other sources.

The dangers connected with the use of raw milk are serious and public health workers are practically unanimous in the conclusion that this danger can be best met by proper pasteurization. The experience of many cities on a large scale shows the wisdom of this conclusion.

Pasteurization has the added advantages of slightly improving the keeping quality of the milk and of softening the curd formed in the stomach, but the outstanding reason for its use is the safety which this process adds to the milk supply.

DISCUSSION

Dr. Ailes: I would like to say that Dr. Harding was for ten years connected with the University of Illinois, having charge of dairying. He knows more bout the production, processing and marketing of milk, I guess, than any other man in the Central West, if not in the whole country, and we are fortunate in having Dr. Harding talk to us.

We tried to get a champion for raw milk. There is considerable sentiment among physicians and the public in favor of raw milk. And recently I have noticed considerable renewed public interest through newspaper and magazine articles. I therefore thought this would be a good topic to discuss at this meeting. Dr. Harding

originally was to talk on the "Production, Processing and Pasteurization of Milk," but I really could not find a champion for raw milk, so I wrote Dr. Harding and asked him if he would make his paper read "Pasteurization vs. Raw Milk," which he has kindly done.

Dr. Isaac D. Rawlings, Chicago: In 1915 the typhoid fever high point rate was about 5. I prophesied that it would be a long time before we reduced it. In 1916, by promulgation, Dr. Robertson, Commissioner of Health, required pasteurization of all milk in Chicago and our rate dropped immediately way down, so that our experience bears out very well what Dr. Koehler has said, that the typhoid fever cases can be still further reduced by pasteurization. Now the rate in Chicago is 0.4 for each 100,000 of our population.

Dr. Harding, in closing: The point of relation of pasteurization to reduction in cases of diarrheal diseases of children is well taken. A couple of generations since outbreaks of such troubles were expected during hot weather, particularly during July and August, and we were rarely disappointed.

With the coming of pasteurization of milk supplies these outbreaks of intestinal upsets of children have steadily decreased until they are practically unknown in cities where the bulk of the milk is pasteurized.

Earlier it was held that these disturbances were due to the presence in the milk of large numbers of bacteria. Later, the favorable results from lactic acid milk have shown that it was not merely a matter of abundance of bacterial life.

Gradually, there has been developed knowledge of a half dozen special forms of bacteria which can cause diarrhea in children. Evidently the abundance of diarrheal diseases in connection with the use of raw milk was due to the presence of some of these special bacteria in such raw milk. Pasteurization evidently destroys these diarrheal bacteria and prevents this type of disease among children.

This reduction in diseases aside from epidemics in connection with pasteurization of milk is quite similar to the improvement noted when water supplies are protected. It was long ago pointed out that protection of the water supply not only reduced the cases of typhoid in the community but it also prevented at least an equal number of cases of other diseases.

The extension of pasteurization is now very rapid and milk supplies are much safer year by year. There are always a few individuals who oppose any progress and since it is difficult to reduce all of the improvements in health to statistical form let us be content to claim only about seventy-five per cent. of the improvements which are actually being made. In this way we will not unduly irritate the opposition and will not provide them with ammunition. Pasteurization of milk supplies has become the orthodox thing among health workers. The U. S. Public Health Service and all State Departments of Health are strongly committed to it, as well as the health departments in practically all progressive cities. The conservatism of age naturally opposes progress and we can well afford to treat kindly those who for any reason do not fully appreciate the great benefits which follow pasteurization of city milk supplies.

CONGENITAL SYPHILIS*

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CHICAGO

The terms congenital and hereditary syphilis are frequently used synonymously, but a disease due to an infection cannot in the true sense of the term be hereditary. Heredity implies some peculiar or characteristic inherent in the germ cell and appearing in one generation after another. Syphilis does not conform to this law. While there are some reported examples of transmission even to the third generation,[1] it is a pure accident of environment that the child becomes infected in utero.

Intimately associated with the question of nomenclature is our conception of the mode of infection of the fetus. Since the introduction of the Wassermann reaction is was noted by many observers that women who bore syphilitic children and have no evident signs of syphilis, give a positive reaction in 75 to 85 per cent. of cases, and further investigation shows that in many cases giving a negative Wassermann, we find spirochetes in the fetal cord and also in the placenta. This finding unquestionably disproves Colles' law which states that the mother of a syphilitic infant who shows no signs of syphilis herself, is immune against infection and can nurse her child with safety. It likewise disproves Profeta's law which is the converse of Colles' law and states that a healthy infant of a syphilitic mother can be nursed by its mother without danger of contracting the disease. The question of paternal syphilis has long been a matter of discussion. Until recently it has been held that it was possible that syphilis might be transmitted to the ovum by the father without infecting the mother. That this is theoretically possible is indicated by the fact that spirochetes have been demonstrated in the semen, and that a few animal inoculations with semen have been successful. Research in other directions has shown, however, that every mother of a syphilitic child is herself syphilitic.

The experiments with rabbits by Brown and Pearce[2] are of much value, though without immediate bearing on the transmission of syphilis to children. Their studies throw some light on

*Read before the Staff Conference of the Norwegian-American Hospital, February 12, 1932.

the important question of how a father suffering from latent syphilis may still be capable of transmitting it to his wife and thus indirectly to the offspring. Material from popliteal nodes of six rabbits, taken after considerable period of supposed recovery, was reinoculated into other rabbits. In each case active syphilis resulted. The authors conclude that recovered rabbits may harbor virulent spirochetes almost indefinitely, even without further manifestations of activity. The lymphoid tissues of the body are probably the chief reservoirs of the virus during latent periods.

In an experimental study of the latent syphilitic as a carrier, Eberson and Engman[3] isolated the spirochete from five cases out of seventy-five, ranging in latency from one to forty years after the disappearance of syphilitic signs and symptoms. Three times the organism was found in inguinal glands and twice in semen. The strains produced typical syphilitic lesions in rabbits' testicles.

From these laboratory observations the question of marriage of syphilitic patients becomes a delicate and mooted problem. Many authorities at present say that it is proper to advise marriage if, after a full course of treatment, the Wassermann reaction of the blood and spinal fluid remained negative for two years. Clinically it has long been accepted that many men with known syphilis not well treated marry and have healthy children. While this may be true in some cases the incidence of congenital syphilis is very high. Its first great effect is fetal and infantile mortality. Abortion and miscarriage occur in 30 to 40 per cent. of cases.[4] Premature birth, especially at about eight months, is very frequently due to syphilis, about two-thirds of all syphilitic children being born about this time. Only 28 per cent. of children born syphilitic survive the first year. (Hyde gives 25 per cent.).

If the infant be born alive but with signs of syphilis, they are generally so characteristic as to be unmistakable. There is marked emaciation; the skin is wrinkled and dusky grey, and the face is shriveled, like that of an old man; on the palms and soles there are not infrequently small blebs or other skin lesions. In these cases the infant usually succumbs in a few days or weeks.

In many cases the disease is latent at birth and the infant may appear to be perfectly healthy and symptoms only show themselves later. They usually appear about the fourth or fifth week, but may be delayed for a year or longer and occasionally even till adult life (Syphilis Hereditaria Tarda). One of the first signs in these cases is usually laryngitis, or syphilitic rhinitis which causes snuffles and interferes with nursing. The character of the cutaneous eruption varies and appears with or soon after the snuffles.

Bullous lesions are much more common in congenital than in acquired syphilis. The blebs contain mucus, or sanguious fluid, and when they rupture form yellowish or brownish crusts. Lesions of this variety may be generalized but more frequently are limited to the palms and soles. Often on the general surface they are intermixed with other skin lesions.

Macules in congenital syphilis appear early, and are first seen over the buttocks and extend from there to the limbs, occasionally involving also the face and neck. By coalescence large patches are formed; some become infiltrated and covered with crusts resembling eczema; while others undergo desquamation, which is in sharp contrast to acquired syphilis.

The papules resemble in many respects those of acquired syphilis. They may be acuminate, convex, flat, large or small, smooth or scale covered, and many terminate in pustules. The small papular form usually occurs on the limbs. More commonly lenticular size papules occur that are discrete or in patches of infiltration. About the buttock and other moist areas they form condylomas, and in the mouth mucous patches.

Pustules may be localized or very rarely generalized; they not infrequently occur immediately consecutive to papular lesions and are evidence of a cachectic condition.

Cutaneous lesions of late congenital syphilis usually occur after the age of two years. They are usually localized and consist of gummas that are often destructive in nature. Nodular lesions are uncommon otherwise; the lesions resemble acquired syphilis. Associated with tertiary skin manifestations there is often:

A. Involvement of the viscera, such as an enlargement of the liver (interstitial hepatitis);

enlargement of the spleen, and there may be an enlargement of the testicles.

B. Affections of the bones are among the most frequent manifestations of hereditary syphilis and among the earliest to appear. In the early course of the disease one of the most constant symptoms is a thickening of the long bones accompanied by disease of the epiphyses. Early x-ray findings are:

1. Multiple separation of the epiphyses.

2. Saw-tooth metaphysis in well calcified bones.

3. Multiple circumscribed osteomyelitis of the long bones, shown by Roentgen rays as a patchy area of rarefication.

There may be an exaggeration of the prominences on either side of the forehead known as frontal bosses or Parrot's nodes.

The bones of the hands may be involved producing a dactylitis.

There may be an anterior bending and a fusiform enlargement of the middle third of the tibia known as saber-shin.

Interference with the development of the nasal process of the malar bones leads to the characteristic "saddle nose." The nose is stubby with large nostrils, a depressed bridge, and a broad base so that the eyes appear widely separated.

Gummas in the bones are not uncommon and occur most frequently in the bones of the face and of the fingers.

C. Involvement of teeth:

1. Hutchinson's teeth is an involvement of the upper central permanent incisors causing their growth to be stunted and producing in addition a peg shape narrower at the biting surface than at the neck and notched on the biting surface.

2. Mulberry molars is a term used for changes in the upper and lower permanent molars, which present small fragile lateral projections from the cusps.

3. An accessary cusp on the inner side of the first molar is a disputed diagnostic sign and is known as the tubercle of Carabelli.

D. Affections of the Eyes:

1. Interstitial keratitis is rare before five and is most common between the ages of five and fifteen.

2. Occasionally the intra-ocular lesions may be the only manifestation of the hereditary syphilis. Of the eyeground pathology,[5] the most characteristic finding is peripheral and central punctate pigmentation and papillary haze or "veiling" of the optic nerve head.

E. Affections of the Ears:

1. Compression nystagmus or fistula symptom without the fistula, when detected in a child, is pathognomonic of congenital syphilis.[6]

2. Nerve deafness is usually progressive and when present in a young person is suggestive of congenital lues.

Treatment. Prophylactic measures directed against congenital syphilis may be considered from the standpoint of radical eugenics to prevent procreation among luetics and of active treatment of prospective parents particularly of the mother during her pregnancy.

Various courses or systems of treatment have been proposed for the congenital luetic; a customary course is as follows:

Oral administration of mercury with chalk 1/10 gr. tid for children under two years; ½ gr. tid for children over six years. This is continued throughout entire course of treatment.

The intramuscular injection of sulpharsphenamine 0.1 gm. per 15 pounds of weight, once weekly for four weeks.

Intramuscular injection of mercury bichloride, 0.1% aqueous solution, 1/10 gr. per fifteen pounds of weight, once weekly for ten weeks. Or inunctions of the official unguentum hydrargyri (50% metalic mercury ointment): 15 grs. twice weekly.

Repetition of the sulpharsphenamine injections, once weekly for eight weeks.

A course of ten intramuscular injections of bismuth as the salicylate, in doses of 5 mg. per kilogram, a single dose should not exceed 100 mg.

These series of injections constitute one course of thirty-two weeks treatment. After one month intermission this course is repeated. A Wassermann is taken after each course of treatment and repeated every six months until negative for one year after cessation of treatment.

Recently stovarsol has been introduced in the treatment of congenital syphilis and results have been as good or better than with neo-arsphenamine and mercury. A course of treatment is as follows:[7]

For 7 days, a daily dose of 0.005 gm. per kgm.
For 7 days, a daily dose of 0.01 gm. per kgm.
For 7 days, a daily dose of 0.015 gm. per kgm.
For 42 days, a daily dose of 0.02 gm. per kgm.

Rest period of 4 to 6 weeks.

Repeat for three successive courses.

Continue treatment if Wassermann is positive.

The untoward reactions of stovarsol consist of gastro-enteritis, neuritis of the extremities and various skin eruptions, some resembling the fixed exanthems of the arsphenamines.

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100,000 DIE OF CANCER IN 1931

The horrible cancer plague is rapidly spreading. According to the statistics of the Metropolitan Life Insurance Company, the death rate from cancer climbed up from seventy-seven to eighty-three per one hundred thousand during 1931, the greatest advance ever made in a single year. At this rate, the total deaths from cancer in the United States during 1931 were about one hundred thousand, and for every person who died of the disease, at least three or four persons are being tortured to death by the monster malady. And this in spite of all that is being done by physicians and surgeons to cure the victims of the disease. If the increase continues at the present rate, the deaths from cancer a dozen years hence will be double what it is at the present time.

Cancer is a disease of civilization. It is practically unknown among wild men and wild animals. It apparently prefers meat addicts to vegetarians.

The specific cause of cancer is still a mystery. No sure remedy is known.—*Health News.*

Society Proceedings

GREENE COUNTY

Regular Quarterly Meeting of the Greene County Medical Society was held in White Hall, Sept. 10, 1932.

Dinner and Social hour at Dyer's Cafe, six to seven o'clock P. M. After dinner adjournment was taken to the basement of the Public Library where the meeting was called to order by the president, Dr. A. R. Jarman at 7:30 P. M. On motion the business session was deferred until after the scientific session.

Dr. Ivan E. Brouse of Jacksonville read a paper on "Diverticulae of the Alimentary Tract," and showed many Radiograms of cases. The discussion of the paper was opened by Dr. W. H. Newcomb of Jacksonville. An informal discussion by the members followed. The paper was highly instructive and the discussion brought out valuable points. Drs. Brouse and Newcomb were invited to give us a paper on chest conditions with special reference to tuberculosis at our December or March Meeting, as they find most convenient to themselves.

Minutes of March and June meetings were read and approved. Various communications were read and disposed of and the Society went on record as opposed to the Government program for hospital building. It was the consensus of opinion that service men can be much better cared for in private hospitals and at much less expense to the tax payer.

Blanks from the committee on Medical Economics of our State Society are doing good work along this line and deserve our hearty cooperation.

The application of Dr. Henry E. Hunt of Roodhouse for membership was read and referred to the board of censors.

Society adjourned at 10:00 P. M.

Eleven members and five visitors were present.

W. H. Garrison,
Secretary.

SCHUYLER COUNTY

The Fifth Annual Meeting of the Schuyler County Medical Society was held at Scripps Park, Rushville, September 1, 1932. The meeting began at 3:30 P. M. with an interesting Medical Clinic conducted by Dr. H. S. Marsh, of the Jackson Clinic, Madison, Wisconsin. Some interesting and unusual cases were shown by Dr. Marsh, which with his comments, made the Clinic of greater value to the many attending this session.

Dinner was served at 6:30 P. M., following which, Dr. Everett P. Coleman, Councilor of the 4th District, of the Illinois State Medical Society, Canton, Illinois, acted in the capacity of Toast-Master. A few guests were introduced to the assembly, then the scientific program for the evening was given.

The first speaker was Dr. Arnold Jackson, Madison, Wisconsin, who gave a highly interesting illustrated talk on "The Treatment of Cholecystitis Based on Observation of 500 Operations." Dr. Jackson has recently carefully studied the case histories of five hundred cases of gall bladder disease operated on by members of his Clinic, and his evaluation of the findings was the basis of this discussion.

Dr. Jackson's discussion showed his intense interest in this subject, and his statistics displayed the fact that each case is given very careful consideration, before the proper operative procedure is decided on. The paper of Dr. Jackson was discussed by Dr. H. J. Jergens, Quincy, Illinois, and others present.

The last talk on the program was given by Dr. G. H. Ewell, of the Jackson clinic, whose subject was "Urologic Problems of General Interest." Dr. Ewell discussed the many manifestations of prostatic disease, gave the indications for operative relief, and the operation of election, for the various conditions found on examination. Some interesting case reports were

briefly discussed, showing the effects of modern diagnostic methods and safeguards commonly used, to lower the mortality of these operations. Dr. H. B. Henkel of Springfield led the discussion of this interesting talk, followed by others who were interested in the presentation.

The total registration for this meeting was approximately 140, many coming from a considerable distance to aid in making the meeting a highly successful one. Owing to the fact that there were some conflicting meetings the same evening in neighboring counties, the attendance was lighter than it should have been, were it not for the other meetings. Many guests came early in the day to participate in golf, tennis and swimming at Scripps Park, which is one of the finest of its kind in the country.

H. O. Munson, M.D.,
Secretary.

Marriages

Hugh G. Bridegroom, Evanston, Ill., to Miss Mary Dunbar of Wheaton, June 11.

Edmund Ralph Carman, New Lenox, Ill., to Miss Elsa Friday of St. Louis, June 11.

Charles E. Franklin to Miss Elva Ruth Erlenborn, both of Oak Park, Ill., at Indianapolis, September 6.

William Earl Gregg, Elgin, Ill., to Miss Virginia Louise Tracy of Pontiac, September 14.

Charles J. Hutton, Atlanta, Ill., to Miss Edith Mae Robinson of Lincoln, June 15.

Harold Charles Lueth, Chicago, to Miss Elizabeth Adelaide Bullock of Oak Park, Ill., September 3.

Mae H. D. McInnes to Mr. Steve G. Pappas, both of West Frankfort, Ill., at Litchfield, August 16.

Peter G. Pitchois, Chicago, Ill., to Miss Harriet S. Georgacakis of Cicero, Ill., July 31.

Holland Williamson to Miss Josephine Alexander Cathcart, both of Danville, Ill., September 10.

Personals

Dr. William A. Evans gave a talk on Public Health Problems at the September 22nd meeting of McHenry County Medical Society.

Drs. R. K. Packard, John R. Neal and Harold M. Camp presented the scientific program at the September 22 meetting of Franklin County Medical Society.

Dr. Samuel M. Feinberg addressed Will-Grundy County Medical Society at a luncheon meeting in Joliet, September 21, on the subject "Hay Fever with Special References to Developments in the 1932 Season."

Dr. Irving Muskat of Chicago addressed the Mississippi Valley Sanatorium Association in Indianapolis, September 12 on "The Value of Eradicating Chronic Tuberculosis of the Middle Ear and Mastoid Diseases in the Tuberculous Patient."

Dr. Benjamin Goldberg of the University of Illinois addressed the class on tuberculosis at the Post Graduate School of Medicine of Columbia University, September 7, on "The Building of Tuberculosis Organizations." He also addressed the American Congress of Physical Therapy on the same date on "The Present Trend in Tuberculosis Mortality."

Dr. Max Thorek has been invited to address the Kane County Medical Society on Wednesday, October 5, 1932, at 6 P. M. at St. Joseph's Hospital, Elgin, Ill. His subject will be "Possibilities in the Reconstruction of the Human Form." (Motion picture demonstration.)

Dr. Marion L. Klinefelter, St. Louis, addressed the Adams County Medical Society, September 12, on fractures.

Dr. Philip H. Kreuscher, Chicago, addressed the Fulton County Medical Society, August 24, on "Fractures of the Elbow and Hip."

Dr. Arthur E. Williams, Rock Island, addressed the first fall meeting of the Rock Island County Medical Society, September 13, on "Maya Medicine."

Dr. Henry E. Monroe, Shelbyville, spoke on appendicitis before the Shelby County Medical Society at Lithia Springs, recently.

The Will-Grundy Counties Medical Society was addressed in Joliet, September 28, by Dr. William L. Brown, Chicago, on cancer.

Dr. William H. Olmsted, St. Louis, addressed the Madison County Medical Society, September 2, on "Arteriosclerosis of the Lower Extremities with Particular Reference to the Treatment of Diabetic Gangrene."

Dr. Lena K. Sadler, Chicago, addressed the Carroll County Medical Society, Savanna, September 30, on "Mental Hygiene and Adoles-

cence," and Dr. Clement L. Martin, Chicago, "Current Proctologic Problems of General Interest."

The St. Clair County Medical Society was addressed, September 7, by Dr. Joseph P. Costello, St. Louis, on "Common Disorders of Childhood." Dr. Daniel L. Sexton, St. Louis, addressed the society, September 1, on "Practical Value of Present-Day Endocrine Therapy."

Dr. George M. Curtis has resigned as professor of surgery in the Graduate School, Division of Biological Sciences, University of Chicago, to accept a similar position at Ohio State University College of Medicine, Columbus. Dr. Curtis became associated with the university in 1925, when he was appointed associate professor of surgery and associate professor of experimental surgery under the Douglas Smith Foundation for Medical Research at the institution. He will assume his new position at once.

Dr. Herbert E. Chamberlain has been appointed associate professor of psychiatry in the department of pediatrics, Division of Biological Sciences, University of Chicago. In this capacity he will assist in a study of delinquent children in Chicago. Medical cooperation covering the entire field of pediatrics will be provided for the study and it is planned to establish an adequate child guidance clinic to which children in need of psychiatric advice and treatment may be referred. While this clinic is being established to assist in this social service study, it is understood that patients from other sources will be accepted, particularly those referred by physicians in the department of pediatrics. It will be administered as a regularly constituted clinic under the jurisdiction of the department of pediatrics. Dr. Chamberlain recently resigned as director of the child guidance clinic of the board of education at Minneapolis.

News Notes

—Guest speakers who addressed the Logan County Medical Society, September 22, were Drs. James G. Carr, on "Prognosis of Coronary Diseases"; Bernard Fantus, "Therapy of Intestinal Stasis"; William R. Cubbins, "Injuries of the Knee Joint," and Carl A. Hedblom, "Surgical Treatment of Pulmonary Tuberculosis." The speakers were from Chicago.

—The Goodwill Industries, a philanthropic organization that provides occupational training for the handicapped, moved, September 26, into its new headquarters, a building formerly occupied by the University of Illinois Medical School. In this building the Goodwill Industries plans to carry on a school for occupation therapy to work in connection with its shops for the handicapped and occupation service and the Cook County Hospital.

—A course of lectures and clinics will be given, October 3-12, at the Norwegian-American Hospital by Dr. Julius Bauer, professor of medicine, University of Vienna, Austria. His subjects include constitutional factors in disease, arterial hypertension, hyperthyroidism and hypothyroidism, obesity, so-called rheumatism, parenchymatous lesions of the liver, diseases of the pituitary gland, suprarenal syndromes and human genetics.

—The University of Illinois Research Hospital is conducting its second experiment with a special ward for hay fever patients. Special air filters free the air from pollen. Each week, from August 15 to October 1, a group of sufferers enters the ward for observation and tests, according to the plan. Only nights are spent in the hospital. Wesley Memorial Hospital has also announced the equipment of several rooms with air filters and rubber covered mattresses and pillows.

—W. H. H. Miller, former head of the state department of education and registration, has been denied a release from the county jail, where he has been serving sentence for operating a fraudulent diploma mill as a state official. In his petition for release Miller stated that he was penniless, having transferred all his property to his wife in Champaign, according to the Chicago *Tribune*. The judge indicated at a previous hearing that the property transfer was fraudulent. Miller will not be released until he has paid the $2,000 fine which was imposed by a jury the same time as the sentence, Dec. 10, 1929. Miller had been found guilty of conspiracy to sell medical and dental licenses to persons not licensed to practice.

—Whooping cough, with about 110 new cases

weekly, is the most prevalent epidemic disease in Illinois at present, states the Illinois *Health Messenger*, September 15. Whooping cough has been unusually prevalent the last two years. Typhoid accounts for the worst current health situation so far as epidemic diseases are concerned, the report continued, with case reports up through the thirty-fifth week of 1932 nearly double the incidence for the corresponding period of 1931. Late in August a sharp decline in cases was noted. However, the bulletin pointed out, there were no epidemics due to this cause. Diphtheria has never been less prevalent in the state; measles is at a low ebb and smallpox is practically nonexistent. Early in the season infantile paralysis manifested threatening epidemic signs but dropped to an average of about six new cases each week in August, a number far below that of 1931.

—School children of Springfield will receive free physical examinations and those unable to pay will be given treatment without charge, according to a plan adopted by the Sangamon County Medical Society, September 1. Vaccinations against smallpox and immunizations against diphtheria will be provided at reduced rates for families in moderate circumstances. The program was sponsored by Dr. Gottfried Koehler, who was recently appointed director of health and hygiene of Springfield schools, a position created with a view to instituting better health supervision in the schools. According to the plan, every doctor in the society will conduct a children's clinic in his office during one office period each week. The school health service will refer all cases to the family physician. The Sangamon-Menard-Logan County Dental Society is planning to adopt a similar program, it was reported. The dental examinations will be conducted at the schools instead of in the dentist's office. The plan will prevail only during the current economic depression.

Deaths

JOHN FRANK ADAMS, Crossville, Ill.; Hahnemann Medical College and Hospital, Chicago, 1896; aged 61; a Fellow, A.M.A.; died, August 23, in the Carmi (Ill.) Hospital, of an overdose of morphine, self-administered.

CARL BAKER, Herrin, Ill.; Northwestern University Medical School, Chicago, 1906; a member of Illinois State Medical Society and member of the Marion Flying Club and holder of private pilot's license, aged 55; died, September 17, from injuries received when his plane crashed during a solo flight.

NATHANIEL ALLISON, chairman of the division of orthopedic surgery of the University of Chicago School of Medicine, died at La Jolla, Calif., August 30, of heart disease. Dr. Allison was born in St. Louis in 1876. He received his M.D. degree from Harvard University in 1901. Following a term of service in the Boston Children's Hospital from 1902 to 1903, he became dean and professor of orthopedic surgery in the Washington University Medical School, St. Louis, and held this position from 1909 to 1923. During the World War he served as chief of orthopedic surgery in the American Expeditionary Forces in France and received the Distinguished Service Cross in recognition of his service. In 1923 he returned to Harvard University Medical School as professor of orthopedic surgery, which position he held until 1929, when he became head of the orthopedic department in the University of Chicago. When in Boston, Dr. Allison was also chief of orthopedic surgery in the Massachusetts General Hospital and director of the Boston School for Crippled Children and the Boston School for Occupational Therapy. In Chicago he was associated with the Gertrude Dunn Hicks and Adele McElwee Memorial hospitals and with the Home for Destitute and Crippled Children. He was president of the American Orthopedic Association in 1922 and also a member of other medical and surgical organizations. He contributed many articles on his specialty to medical literature. He was also co-author with Ghormley of "Diagnosis in Joint Disease." In the American Medical Association he served as chairman of the Section on Orthopedic Surgery from 1914 to 1915. He rendered especially valuable service as a member of the Cooperative Committee on Fractures, which arranged exhibits on this subject at most of the recent annual sessions of the American Medical Association. He cooperated also in the publication of "The Outline of the Treatment of Fractures," issued by the Association.

CLEAVER HENRY BRINKERHOFF, Chicago; University of Illinois College of Medicine, Chicago, 1913; aged 43; died, July 13, of endocarditis.

WILLIAM CHARLES DAVIS, Chicago; College of Physicians and Surgeons, Keokuk, Iowa, 1878; aged 73; died, July 13, of myocarditis.

ANTHONY J. KARALIUS, Chicago; Loyola University School of Medicine, Chicago, 1916; aged 42; died, August 23, of cyanide poisoning, self-administered.

THOMAS C. MARION, Gillespie, Ill.; College of Physicians and Surgeons, Keokuk, Iowa, 1886; aged 87; died, June 27, of arteriosclerosis.

WALDEMAR J. SIEMINOWICZ, Chicago; College of Physicians and Surgeons, Baltimore, 1893; College of Physicians and Surgeons, Chicago, 1895; aged 72; died, June 13, of carcinoma of the rectum and chronic nephritis.